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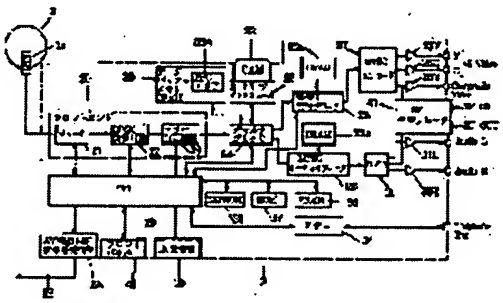
(54) DEVICE AND METHOD FOR CONTROLLING ELECTRONIC PROGRAM GUIDE DISPLAY

(57)Abstract:
PROBLEM TO BE SOLVED: To quickly and surely select a desired program without interrupting the pictures of a viewed program as much as possible by switching the display state of plural category selection pictures to the state of displaying the still picture of a prescribed category.
SOLUTION: A CPU 29 controls an MPEG video decoder 25, generates the OSD data of the data stream of the category and displays them on a monitoring device. Then, when the left (right) button switch of a remote commander is operated, the CPU 29 displays a cursor on the picture of the prescribed category. A user moves the cursor by operating a button switch at the time of selecting the category. When a selection button switch is operated, the data stream of the program of the category specified by the cursor is displayed instead of the data stream of the category. Also, when the cursor is moved onto the still picture of the prescribed program, the display of a title bar is rewritten every time. That is, the category icon and the title of the program where the cursor is positioned are displayed on the title bar.



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CLAIMS

[Claim(s)]
[Claim 1] In the electronic program guide display control which is the electronic program guide which chooses a program and controls the display of said electronic program guide which consists of a still picture which reduced the representation screen of said program When the 2nd actuation means operated when choosing a predetermined thing the 1st actuation means operated when displaying two or more category selection images, and out of said category selection image, and said 1st actuation means are operated, In the condition that said category selection image is displayed while displaying said category selection image The electronic program guide display control characterized by having the still picture display-control means on which it replaces with said category selection image, and said still picture is displayed when said 2nd actuation means is operated.
[Claim 2] The electronic program guide display control according to claim 1 characterized by having further a receiving means to receive the program corresponding to said still picture out of said still picture when a predetermined thing is chosen.
[Claim 3] Said category is an electronic program guide display control according to claim 1 characterized by being a genre or a broadcast channel.
[Claim 4] In the electronic program guide display-control approach which is the electronic program guide which chooses a program and controls the display of said electronic program guide which consists of a still picture which reduced the representation screen of said program The electronic program guide display-control approach characterized by replacing with said category selection image and displaying said still picture in the condition that display two or more category selection images, and said category selection image is displayed when the 1st actuation is made when the 2nd actuation is made.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the electronic program guide display control and approach which enabled it to choose a desired program quickly and certainly out of many programs, without interrupting the image of the program as much as possible in the condition of watching the predetermined program especially, about an electronic program guide display control and an approach.
[0002]
[Description of the Prior Art] Recently, a television signal is digitized and transmitted through satellites, such as a broadcasting satellite and a communication satellite, and the system which receives this at each home is spreading. In this system, since it is possible to secure about 80 channel, for example, very many programs can be broadcast.
[0003] In such a system, in order to enable it to choose a desired program certainly out of many programs, an electronic program guide (EPG:Electrical Program Guide) is transmitted, this is received and displayed in a receiving side, and choosing a desired program from this electronic program guide is proposed.
[0004]
[Problem(s) to be Solved by the Invention] However, in the conventional EPG system, in the condition that the predetermined program is displayed, since he was trying to display an electronic program guide in piles on it, the image of the original program was interrupted and the technical problem which becomes hard to see occurred.
[0005] As this invention is made in view of such a situation and does not interrupt the image of the program to which it is viewing and listening as much as possible, it enables it to choose a desired program quickly and certainly.
[0006]
[Means for Solving the Problem] An electronic program guide display control according to claim 1 When the 2nd actuation means operated when choosing a predetermined thing the 1st actuation means operated when displaying two or more category selection images, and out of a category selection image, and the 1st actuation means are operated, While displaying a category selection image, when the 2nd actuation means is operated in the condition that the category selection image is displayed, it replaces with a category selection image and is characterized by having the still picture display-control means on which a still picture is displayed.
[0007] In the condition that display two or more category selection images, and the category selection image is displayed when the 1st actuation is made, when the 2nd actuation is made, the electronic program guide display-control approach according to claim 4 is replaced with a category selection image, and is characterized by displaying a still picture.
[0008] In an electronic program guide display control according to claim 1 When it was operated when the 1st actuation means displayed two or more category selection images, it is operated when the 2nd actuation means chooses a predetermined thing out of a category selection image, and the 1st actuation means is operated, While displaying a category selection image, when the 2nd

actuation means is operated in the condition that the category selection image is displayed, it replaces with a category selection image and a still picture is displayed.
[0009] In the electronic program guide display-control approach according to claim 4, in the condition that display two or more category selection images, and the category selection image is displayed when the 1st actuation is made, when the 2nd actuation is made, it replaces with a category selection image and a still picture is displayed.
[0010]
[Embodiment of the Invention] Drawing 1 expresses the example of a configuration of the sending set adapting this invention. This sending set is equipped with a switcher 301, and if it is the U.S. and is each broadcasting station, such as CNN, GAORA, Asahi, STAR, TRY and MTV, a supermarket, SUPO, BBC, CSNI, and Green (a trademark or service mark), and Japan, the video data and audio data which are supplied from broadcasting stations, such as NHK, Nippon Television, TBS television, Fuji Television, TV Asahi, TV Tokyo, and WOWOW (a trademark or service mark), will be inputted into this switcher 301 as digital data.
[0011] Or it is made by this switcher 301 again as [input / the digital video signal and audio signal which were reproduced from the digital video recorder (DVTR) which is not illustrated].
[0012] A switcher 301 chooses two or more predetermined broadcast channels (however, the video signal and the audio signal are counted as one broadcast channel in this case) among the video signals and audio signals which were controlled by the program sending-out control device 308, and were inputted into it, and outputs them to promotion channel generation equipment 302.
[0013] Moreover, from the inputted signal, a switcher 301 chooses five predetermined broadcast channels, and outputs them to MPEG video / audio encoder block 303-1. Similarly, the predetermined signal for 5 broadcast channels is chosen and outputted also to MPEG video / audio encoder block 303-2 thru/or 303-7.
[0014] The predetermined video signal furthermore outputted from the switcher 301 is supplied to the JPEG encoder block 310 which EPG data generation equipment 309 contains.
[0015] Promotion channel generation equipment 302 processes the signal of two predetermined channels independently among the signals of two or more inputted broadcast channels, respectively.

[0016] Moreover, bit map data (these are also memorizable beforehand to IRD2 side of drawing 20 mentioned later), such as an icon which EPG data generation equipment 309 generated under control of the program sending-out control unit 308 and which should be transmitted, a station LOGO, and a category LOGO, are inputted into this promotion channel generation equipment 302. Promotion channel generation equipment 302 is superimposed on the video signal into which this bit map data is inputted from a switcher 301.
[0017] Promotion channel generation equipment 302 outputs the processed data to a multiplexer (MUX) 304-1. In addition, about the detail of this promotion channel generation equipment 302, it mentions later with reference to drawing 2 .
[0018] MPEG video / audio encoder block 303-1 thru/or 303-7 were inputted from the switcher 301 -- the MPEG video (five sets) / audio encoder for five channels are built in so that the video signal and audio signal of every 5 broadcast channels can be encoded, respectively. MPEG video / audio encoder 303-1 thru/or 303-7 encode the video data and audio data which were inputted, and outputs them to the corresponding multiplexer 304-2 thru/or 304-8.
[0019] The JPEG video encoder block 310 built in EPG data generation equipment 309 It corresponds to a command from the program sending-out control unit 308 out of the video signal inputted from the switcher 301. A predetermined representation screen is chosen, the representation screen is reduced and it considers as a small screen, and further, the data of the reduced screen are compressed and it outputs to a multiplexer 304-1 thru/or 304-8 as 1st EPG data (EPG1).
[0020] Moreover, other EPG data (EPG2) generated by EPG data generation equipment 309 are

supplied to a multiplexer 304-2 thru/or 304-8. This EPG2 contains EPG data centering on the text of a comparatively short period. Moreover, the EPG data of EPG2 and the 3rd EPG data (EPG3) centering on the text of the period after it are supplied to the multiplexer 304-1.
[0021] A multiplexer 304-2 thru/or 304-8 and a multiplexer 304-1 multiplex these EPG1 thru/or EPG3, or EPG1 and EPG2 with the video data and audio data into which it is inputted from MPEG video / audio encoder block 303-1 thru/or 303-7, or promotion channel generation equipment 302, and output them to the digital modulation circuit 305-2 thru/or 305-8, or the digital modulation circuit 305-1. The digital modulation circuit 305-1 thru/or 305-8 carry out the digital modulation of the inputted digital data by the predetermined method (for example, QPSK method). These digital modulation circuits 305-1 thru/or the output of 305-8 are assigned corresponding to the transponder (the transponder 1 of drawing 12 thru/or 8 mentioned later) of a satellite, respectively.
[0022] The synthetic circuit 306 compounds the digital modulation circuit 305-1 thru/or the output of 305-8, and transmits it towards a satellite through an antenna 307.
[0023] Drawing 2 expresses the example of a configuration of promotion channel generation equipment 302. The data of one broadcast channel outputted from the switcher 301 are processed by independent screen generation equipment 332-1 as an independent screen. And the output is inputted into super in POZA 333-1, and the data supplied from EPG data generation equipment 309 superimpose it. And the output of super in POZA 333-1 is outputted to MPEG video / audio encoder block 334-1.
[0024] Similarly, after the remaining data for 1 broadcast channel outputted from the switcher 301 are independently processed by independent screen generation equipment 332-2, the data which were inputted into super in POZA 333-2, and were inputted from EPG data generation equipment 309 superimpose them. The data outputted from super in POZA 333-2 are inputted into MPEG video / audio encoder block 334-2, and are made as [encode].
[0025] In addition, the audio data of every one channel incorporated by independent screen generation equipment 332-1,332-2 are encoded, respectively with MPEG video / audio encoder 334-1,334-2.
[0026] The data outputted from MPEG video / audio encoder block 334-1,334-2 are multiplexed by the multiplexer 335, and are made as [output / to a multiplexer 304-1].
[0027] Thus, the Europe specification of the digital video broadcast performed towards the receiving set (IRD2 of drawing 20) arranged at each home through a satellite Although collected by the project DVB (DigitalVideo Broadcasting) in which about 150 companies participate focusing on a European broadcast entrepreneur, a European manufacturer, etc. According to this specification, the screen of an electronic program guide can be generated from the EPG data transmitted by doing in this way, and it can be made to display on a monitoring device in a receiving side.
[0028] Next, actuation of the example shown in drawing 1 and drawing 2 is explained. A switcher 301 is controlled by the program sending-out control device 308, chooses the signal for two channels which should be broadcast as an object for promotions, and outputs it to promotion channel generation equipment 302.
[0029] In independent screen generation equipment 332-1, the data of one channel outputted from the switcher 301 are inputted into super in POZA 333-1, after predetermined processing is performed. The program of this independent screen introduces a part of that program, in order to advertize a predetermined program. Drawing 3 expresses the example of a display of this promotion program.
[0030] Super in POZA 333-1 superimposes the data inputted into this video data from EPG data generation equipment 309. In the example of a display of drawing 3 , the alphabetic character of "promotion channel 1 NHK" as a subject name currently displayed on the upper left, the alphabetic character of "program introduction" as contents of an item, and the LOGO (in the case of this example "NHK") of the broadcasting station (station) which is actually broadcasting this program are superimposed (however, when memorizing at IRD2 side, not superimposed on a station LOGO).

[0031] And the output of super in POZA 333-1 is inputted into MPEG video / audio encoder block 334-1, and is encoded by the MPEG 2 method.
[0032] Same processing is performed by independent screen generation equipment 332-2, super in POZA 333-2, and MPEG video / audio encoder block 334-2 also to the signal of other one remaining channels chosen by the switcher 301. Therefore, in the case of this example, two promotion channels which introduce a program on an independent screen will be generated.
[0033] A multiplexer 335 multiplexes the data of the promotion channel which consists of two independent screens outputted from MPEG video / audio encoder block 334-1,334-2, and outputs them to a multiplexer 304-1.
[0034] A multiplexer 304-1 multiplexes and packet-izes the EPG data [EPG / EPG and / 3] 1 inputted from EPG data generation equipment 309 to the data inputted from promotion channel generation equipment 302, and outputs them to them. The digital modulation circuit 305-1 carries out the digital modulation of the data inputted from the multiplexer 304-1. The data outputted from this digital modulation circuit 305-1 are assigned to the guide transponder (transponder 1 of drawing 12) of a satellite.
[0035] On the other hand, MPEG video / audio encoder block 303-1 encodes the video data and audio data for 5 broadcast channels which were inputted from the switcher 301, and outputs them to a multiplexer 304-2. A multiplexer 304-2 packet-izes the data for these five broadcasts, and the EPG data EPG1 and EPG2 supplied from EPG data generation equipment 309, multiplexes them, and outputs them to the digital modulation circuit 305-2. The digital modulation circuit 305-2 carries out the digital modulation of the data inputted from the multiplexer 304-2. The data by which the digital modulation was carried out in this digital modulation circuit 305-2 are assigned to the 1st transponder of the usual transponders (transponder 2 of drawing 12).
[0036] Hereafter, similarly, a multiplexer 304-3 thru/or 304-8 packet-ize other data of every five broadcast channels encoded by MPEG video / audio encoder block 303-2 thru/or 303-7, and the EPG data EPG1 and EPG2, multiplexes them, and inputs them into the corresponding digital modulation circuit 305-3 thru/or 305-8. The digital modulation circuit 305-3 thru/or 305-8 carry out the digital modulation of the inputted data. The data number modulated by these digital modulation circuit 305-3 thru/or 305-8 is assigned to each of six usual remaining transponders (the transponder 3 of drawing 12 thru/or 8).
[0037] The synthetic circuit 306 compounds the data outputted from the digital modulation circuit 305-1 thru/or 305-8, and outputs them towards a satellite through an antenna 307. A satellite processes this data by eight transponders, and transmits it towards each receiving set (IRD2).
[0038] Here, the EPG data [EPG / EPG and / 3] 1 are explained. In this example, if the select button switch 131 (drawing 24) is further operated after operating the race card button switch 144 (drawing 24) of a remote commander 5 and displaying the data stream (drawing 32) of a genre on a monitoring device 4 (drawing 20) so that it may mention later, as shown in a monitoring device 4 at drawing 4 , a superposition indication of the screen of the data stream of a program will be given on the usual screen. This data stream is constituted by the title bar and the program window as shown in drawing 5 and drawing 6 , respectively.
[0039] In the title bar, as shown in drawing 5 , the genre icon which expresses the genre of a program to the leftmost side symbolically is displayed. The station LOGO as a symbol of the broadcasting station which is broadcasting the program is displayed on the degree of a genre icon. And the title of a station LOGO, next its program is displayed.
[0040] Moreover, in the case of this example, the program window consists of still pictures which reduced the representation screen of the program of five broadcast channels, as shown in drawing 6 .
[0041] Moreover, if the information button switch 145 (drawing 24) of a remote commander 5 is operated, as shown in drawing 7 , it is made as [display / the information screen which explains a program to a detail more]. A title bar is displayed on the top section of this information screen like

the case in the data stream shown in drawing 4 .
[0042] The reduced screen of the still picture of a representation screen is displayed on the lower left of a title bar, and the broadcast time of this program and the name of the performer (person) of this program are displayed on the upper and lower sides of that right-hand side, respectively. And the contents explanatory note explaining the contents of this program is further displayed on that bottom.
[0043] Among these, EPG1 is still picture data which constitute the program window shown in drawing 6 , EPG2 and EPG3 are data, such as a title of a program, broadcast time, a performer, and a contents explanatory note, and EPG2 is related with the program broadcast in the future when EPG3 is further than the program expressed by EPG2 about the program from the present to the nearer future. These EPG1 thru/or EPG3 is displayed as OSD.
[0044] Moreover, as OSD, drawing 8 thru/or drawing 10 mainly process only a character (alphabetic character), and expresses the example of a display of the electronic program guide displayed in the receiving set (a still picture cannot be processed) (IRD2 of drawing 29) which can be displayed.
[0045] Drawing 8 expresses the electronic program guide (whole race card) of all channels, a broadcasting station name is expressed to an axis of ordinate, time of day is expressed with the axis of abscissa, it is the broadcasting station and the title of the program broadcast at the time of day is displayed on the location specified with the two shafts.
[0046] Moreover, drawing 9 expresses the example of a display of the electronic program guide (channel race card) of one broadcasting station. In this example, the title and broadcast start time of a program which are broadcast by that broadcast channel are displayed below from the top.
[0047] The whole race card shown in drawing 8 and the channel race card shown in drawing 9 are information (program approximate account) indispensable to choose a desired program. On the other hand, as shown in drawing 10 , although the information (program detail explanation) which explains the contents of the predetermined program (or predetermined broadcasting station (broadcast channel)) is information which is not necessarily needed although a program is chosen, it chooses a program upwards and is consulted. Then, this program detail explanation is also transmitted as EPG data.
[0048] When both this race card (program approximate account) and the contents of a program (program detail explanation) are transmitted from a part and each transponder for a long time, the transmission rate of the video data which should transmit only that part essentially, and audio data will get worse. Then, as shown in each transponder (a multiplexer 304-2 thru/or 304-8) of a transmission channel which transmits the data of the usual program as EPG2 from EPG data generation equipment 309 at drawing 11 (A), it is a part for an a maximum of 80 broadcast channel (supposing it considers as a part for 10 broadcast channels per one transponder and assigns eight transponders to one satellite, it will become 80 broadcast channels.). However, in the case of the example of drawing 1 , the race card data [considering as a part for 37 (= 5x7+2) broadcast channels] for 24 hour and the contents data of a program about the program by which the present (setting at the time of day) broadcast of [for 80 broadcast channels (a part for 37 broadcast channels)] is carried out, and its following program are transmitted.
[0049] It prevents that the transmission rate of a video signal and audio data which should be transmitted essentially gets worse in each transponder by this.
[0050] On the other hand, let the transmission channel (transmission channel corresponding to the digital modulation circuit 305-1) of promotion channel generation equipment 302 be a channel for mainly (preferentially) transmitting the program which encourages introduction of the program currently broadcast in other transmission channels (the digital modulation circuit 305-2 thru/or transmission channel corresponding to 305-8), and reception of broadcast, and the promotion-program of a program provider's advertisement. Even if the transponder (guide transponder) which transmits the information on this promotion channel transmits the usual program unlike other usual transponders, since there are few those numbers, it can transmit more race card data and contents

data of a program.
[0051] So, by this promotion channel, from EPG data generation equipment 309, as EPG3, as shown in drawing 11 (B), more nearly prolonged race card data and the more nearly prolonged contents data of a program are transmitted. In this example, race card data are used as the data for 150 hour, and let the contents data of a program be data for 70 hour.
[0052] For this reason, as shown in drawing 12 , in a guide transponder (transponder 1), the race card data for 150 hour of each broadcast channel of 80 broadcast channels and the contents data of a program for 70 hour of 80 broadcast channels are transmitted.
[0053] On the other hand, in the usual transponder (a transponder 2 thru/or transponder 8), the race card data for 24 hour of 80 broadcast channels and the contents data of a program for 80 broadcast channels to a current program and the following program are transmitted.
[0054] In addition, as shown in drawing 11 , since still picture data (data stream) are indispensable because of program selection, like a race card (program approximate account), in the usual transponder, a part (EPG 1-2) for 24 hour is transmitted, and a part (EPG 1-2 and EPG 1-3) for 150 hour is transmitted in a guide transponder.
[0055] Next, the detail of EPG data is explained further. Data required to create an electronic program guide from this EPG data although EPG data are transmitted in a DVB system as a kind of the service information SI (Service Information) with other accompanying data are data shown in drawing 13 .
[0056] The service feeder who specifies the feeder who supplies service (broadcast channel), the service name showing the name of service, and the service mold (service type) showing the type of service are described by SDT in EPG data (Service Description Table), respectively. Description showing distinction of whether to be an independent screen (promotion_service) is performed in this service type.
[0057] The title showing a program name is Short of EIT (Event Inforation Tabl). Event It is specified as event_name of Desciptor. A subtitle (mold) is Component of EIT. It is described by Descriptor.
[0058] Current time is specified to TDT (Time and Date Table) as UTC_time.
[0059] Program start time is described as start_time of EIT. Program time amount length is described as duration of EIT.
[0060] Furthermore, the parental (pair rental) rate (ParentalRate) which specifies the age, for example when it permits viewing and listening of only the person beyond predetermined age is Parental of EIT. Rating It is described by Descriptor.
[0061] Image mode is Component of EIT. It is described by Descriptor and offer language is ISO639 of PMT. language It is described by Descriptor. Moreover, offer voice mode is Component of EIT. It is described by Descriptor.
[0062] A category is Content of EIT. It is described by Descriptor.
[0063] Moreover, program approximate accounts shown by the performer who showed, for example by drawing 7 , and drawing 8 and drawing 9 , such as a whole race card and a channel race card, are Short of EIT. Event It is described by Descriptor and program detail explanation of the contents explanatory note of drawing 7 , program detail explanation of drawing 10 , etc. is Extended of EIT. Event It is described by Descriptor.
[0064] Furthermore, promotion information, such as a subject name (promotion channel 1 NHK) explained with reference to drawing 3 , the contents of an item (program introduction), and a station LOGO (NHK) (when transmitting), is Promotion of SDT. It is described by Descriptor.
[0065] Drawing 14 expresses the configuration of SDT. This SDT contains the data which describe the service in systems, such as a service name and a service provider. In addition, in drawing, the figure in a parenthesis expresses the byte count.
[0066] 10 bytes of the head are used as a header, and consists of the common structure 1 (3), a transport stream ID (transport_stream_id (2)), common structure 2 (3), and an original network ID (original_network_id (2)). The transport stream ID offers the label for discriminating the transport

stream (transportstream) which SDT gives information from the transport stream of others which are multiplexed within the same delivery system.
[0067] The original network ID is a label which identifies the network ID which is the generator of a delivery system.
[0068] In the degree of a header, they are a service descriptor loop formation (service descriptors loop) [0] thru/or service. descriptorsloop [N] is arranged and, finally CRC_32(4) for error corrections is arranged.
[0069] service_id (2), EIT_schedule_flag, EIT_pre/fol_flag, running_status, and free_CA_mode are arranged at each service descriptor loop formation.
[0070] service_id offers the label for discriminating service from other services in the same transport stream. service_id is the same as that of the program number (program_number) in a corresponding programmed map section (program_map_section).
[0071] EIT_schedule_flag is EIT_schedule in its transport stream. The existence of information is shown.
[0072] EIT_present/following_flag is EIT_present/following in its transport stream. The existence of information is shown.
[0073] service having not started running_status yet, or starting after several minutes, and having already started (for image transcription preparation of VCR) -- or it is shown that it is [current] having already started or under interruption etc.
[0074] It means whether service can access for free and whether free_CA_mode is controlled by it and the conditional access (conditional access) system.
[0075] discriptor_loop_length is arranged at the degree. This shows all the continuing descriptors cutting tool length.
[0076] Following service_descriptor [i] is text format and supplies a service_provider (service provider) name and a service name with service_type.
[0077] Following country_availability_descriptor [i] expresses an authorization country list and a disapproval country list, and 2 times [a maximum of] insertion is possible for it.
[0078] promotion which descriptors has been arranged and was mentioned above next here descriptor etc. is contained. [0079] Drawing 15 expresses the configuration of EIT. The common structure 1 (3), service_id (2), the common structure 2 (3), and transport_stream_id (2) are arranged at 10 bytes of top header.
[0080] original_network_id (2) is arranged, next last_table_id (1) is arranged at the degree. This last_table_id (1) identifies last (= max) table_id. When only one table is used, table_id of the table is set up. When table_id takes a continuation value, information is also maintained in order of the date. The following, event descriptors loop [0] thru/or eventdescriptors loop [N] is arranged and, finally CRC_32(4) is arranged.
[0081] Each event event_id (2) which provides descriptors with the identification number of an event to describe is arranged, and start_time (5) which indicates the start time of an event by MJD with UTC is arranged at the degree. This field gives 16LSB of MJD by 16 bits, and expresses 6 figures by BCD of 4-BIT with the next 24 bits. For example, 93/10/12 12:45:00 is encoded with 0XC078124500.
[0082] the next duration (3) -- the duration of an event (program) -- the time -- a part and a second -- expressing -- **** .
[0083] Next, running_status is arranged and free_CA_mode is arranged further.
[0084] Furthermore descriptor_loop_length (1.5) is arranged at the degree, and Short_event_descriptor [i] (7+alpha) is arranged at the degree. This offers short description (race card) of an event name and an event by text format.
[0085] Following Extended_event_descriptor [i] (11+alpha) is Short mentioned above. event Event description (the contents of a program) still more detailed than what is offered by descriptor is offered.

[0086] furthermore, audio_component_descriptor -- [i (6)] and video_component_descriptor -- [i (3)] and subtitle_component_descriptor -- [i (6)] is described.
[0087] Following CA_identifier_descriptor[i] (4) describes whether it scrambles and or not whether a condition is attached to limited reception of accounting etc.
[0088] Furthermore under it, other descriptors(es) are described. event_still_image_descriptor [i] which records the data (still picture data) of the program window shown in drawing 6 on this descriptors is arranged.
[0089] Drawing 16 expresses the format (format of a still picture) of this event_still_image_descriptor [i]. As shown in this drawing, in that head, 8-bit descriptor_tag showing an informational class being still picture data is arranged, and 8-bit descriptor_length which shows the die length of the whole expressed with this format is arranged at that degree.
[0090] 8-bit descriptor_number is arranged at the degree of descriptor_length, and 8-bit last_descriptor_number is arranged further at the degree. These express the number of this descriptor, and the number of the last (max) descriptor, respectively.
[0091] And finally image_structure as substantial image data of a still picture is arranged. This image_structure is constituted by 8 bits format_identifier, 32-bit image_size, and image_data.
[0092] format_identifier expresses ID of image_data, and when format_identifier is 0x10, let image_data be image data binary [monochrome]. When format_identifier is 0x11, image_data is made into the image data of 256 monochrome gradation, and in the case of 0x12, it considers as 8-bit image data, respectively, and, in the case of 0x20, let it be RGB and the image data compressed by JPEG. Therefore, since the reduced screen which constitutes a program window is used as the image compressed by the JPEG method in the case of the example shown in drawing 1 , format_identifier is set to 0x20.
[0093] In addition, when image_data is made into binary monochrome image data, the value may turn into a value which cannot be divided among 8 bits. In this case, stuffing (Stuffing) of the dummy data is carried out.
[0094] image_size expresses the magnitude of image_data.
[0095] Drawing 17 expresses the configuration of TDT. As shown in this drawing, TDT consists of common structure 1 (3) and UTC_time (5).
[0096] PMT (ProgramMap Table) indicated to be PAT (Program Association Table) of following drawing 18 to drawing 19 is contained in SI besides the above table.
[0097] PAT -- drawing 18 -- being shown -- as -- common -- structure -- one -- (-- three --) -- transport_stream_id -- (-- two --) -- common -- structure -- two -- (-- three --) -- others -- program_map_id_loop -- [-- zero --] -- (-- four --) -- or -- program_map_id_loop -- [-- N --] -- (-- four --) -- constituting -- having -- the last -- CRC_ -- 32 (4) is arranged.
[0098] every -- program_map_id_loop -- [i (4)] -- program_number -- [i (2)] and program_map_PID -- it consists of [i (2) (or network_PID)].
[0099] program_number expresses the program with effective corresponding program_map_PID. When this is set to 0x0000, PID referred to next turns into network_PID. In all other cases, let the value of this field be custom. This field does not take the same value 2 times or more in one version of PAT. For example, program_number is used as broadcast channel assignment.
[0100] network_PID is transport containing NIT (Network Information Table). PID of a stream packet is specified. Although custom (DVP 0x0010) of the value of network_PID is carried out, it cannot take the value reserved for other purposes. The existence of network_PID is an option.
[0101] program_map_PID is transport which contains effective PMT to the program specified by program_number. PID of a stream packet is specified. There is no program_number with one or more program_map_PID allocations. Although the value of program_map_PID is defined by the user, it cannot take the value reserved for other purposes.
[0102] 10 bytes of header set to PMT from the common structure 1 (3), program_number (2), the common structure 2 (3), and PCR_PID (1.375) as shown in drawing 19 is arranged at the head.

PCR_PID is transport which includes the effective PCR field to the program specified by program_number. PID of a stream packet is shown. When there is no PCR related with the program definition to privadestream, this field takes the value of 0x1FFF.
[0103] Next, program_info_length (1.5) is arranged. This specifies the byte count of descriptor which continues just behind this field.
[0104] The next program info As for descriptors, CA_descriptor, Copyright_descriptor, Max_bitrate_descriptor, etc. are described.
[0105] In the degree, it is stream. type loop [0] (5+alpha) thru/or stream type CRC_32(4) is arranged with loop [N] (5+alpha).
[0106] Each stream type loop has stream_type (1) and elementary_PID (2). stream_type is elementary carried by the packet with PID which takes the value specified by elementary_PID. The mold of stream or a payload is specified. The value of stream_type is prescribed by MPEG 2.
[0107] elementary_stream-PID is related elementary. stream and transport which carries data PID of a stream packet is specified.
[0108] It is related elementary which ES_info_lenght (1.5) is arranged at that degree and this is 12 bit fields, and 2 bits of the beginning are 00 and continues just behind this field. The byte count of descriptor of stream is specified.
[0109] To the degree, it is ES. info descriptors [N] is specified. Here, CA_descriptor and other descriptor(s) are described.
[0110] Drawing 20 shows the example of AV (Audio Video) structure of a system adapting this invention. In the case of this example, the AV system 1 is constituted by the monitoring device 4 with IRD (Integrated Receiver/Decoder)2 which restores to the signal received through the satellite (a broadcasting satellite or communication satellite) which does not illustrate the electric wave transmitted from the sending set of drawing 1 with a parabolic antenna 3. A monitoring device 4 and IRD2 are mutually connected by AV Rhine 11 and the control line 12.
[0111] To IRD2, it is made as [input / with an infrared (IR:Infrared) signal / by the remote commander 5 / a command]. That is, if the predetermined thing of the button switch of a remote commander 5 is operated, it is made as [carry out / outgoing radiation of the infrared signal corresponding to it is carried out from IR dispatch section 51, and / signal / to the IR receive section 39 (drawing 23) of IRD2 / incidence].
[0112] Drawing 21 expresses the electrical installation condition of the AV system 1 of drawing 1 . A parabolic antenna 3 has LNB(Low Noise Block downconverter)3a, changes the signal from a satellite into the signal of a predetermined frequency, and supplies it to IRD2. IRD2 supplies the output to the monitoring device 4 through AV Rhine 11 constituted by three lines, a composite video signal line, an audio L signal line, and an audio R signal line.
[0113] Furthermore, IRD2 has AV equipment control signal transceiver section 2A, and the monitoring device 4 has AV equipment control signal transceiver section 4A, respectively. These are mutually connected by the control line 12 which consists of a wye yard SIRCS (Wired Sony Infrared Remote Control System).
[0114] Drawing 22 expresses the example of a configuration of the transverse plane of IRD2. The power-source button switch 111 is formed in the left-hand side of IRD2. This power-source button switch 111 is operated when a power source is turned on or turned off. When a power source is turned on, it is made as [light up / LED112]. By actuation of the TV/DSS change-over button switch 123, when DSS mode is set up, the light is switched on, and LED113 on the right-hand side of LED112 puts out the light, when TV mode is set up. DSS (DigitalSatellite System) mode is the mode in which the electric wave transmitted through a satellite by the method mentioned above is received, and TV mode is the mode in which the usual terrestrial television broadcasting is received here.
[0115] LED114 is made as [switch / the light], when the predetermined message has been transmitted to this IRD2 through a satellite. LED114 is switched off, when a user outputted and

displays this message on a monitoring device 4 and this is checked.
[0116] The menu button switch 121 is operated when displaying a menu on a monitoring device 4. The exit button switch 122 is operated when eliminating an OSD display.
[0117] The rise button switch 117, the down button switch 118, the left button switch 119, and the light button switch 120 are arranged at the four directions of the select button switch 116, respectively. These rise button switches 117, the down button switch 118, the left button switch 119, and the light button switch 120 are operated when moving cursor in the direction of four directions. Moreover, the select button switch 116 is operated when deciding selection (when selecting).
[0118] Drawing 23 shows the example of a configuration inside [for performing reception with the DSS mode mentioned above] IRD2. The RF signal outputted from LNB3a of a parabolic antenna 3 is supplied to the tuner 21 of a front end 20, and gets over. The output of a tuner 21 is supplied to the QPSK demodulator circuit 22, and a QPSK recovery is carried out. The error correction circuit 23 is supplied, an error is detected and corrected, and the output of the QPSK demodulator circuit 22 is amended if needed.
[0119] The key required to decode a code is stored in CAM (Conditional Access Module)33 constituted with the IC card which consists of CPU, a ROM, RAM, etc. with the decode program. When the signal transmitted through a satellite is enciphered, a key and decode processing are needed for decoding this code. Then, this key is read from CAM33 through the card reader interface 32, and a demultiplexer 24 is supplied. A demultiplexer 24 decodes the enciphered signal using this key.
[0120] In addition, accounting information besides a key required for decryption and a decode program etc. is stored in this CAM33.
[0121] A demultiplexer 24 receives the input of the signal which the error correction circuit 23 of a front end 20 outputs, and makes the data buffer memory (DRAM (DynamicRandom Access Memory) or SRAM (StaticRandom Access Memory)) 35 once memorize this. And suitably, this is read, the decoded video signal is supplied to the MPEG video decoder 25, and the decoded audio signal is supplied to the MPEG audio decoder 26.
[0122] The MPEG video decoder 25 makes DRAM25a memorize the inputted digital video signal suitably, and performs decoding of the video signal compressed by the MPEG method. The decoded video signal is supplied to the NTSC encoder 27, and is changed into the luminance signal (Y) of NTSC system, a chroma signal (C), and a composite signal (V). A luminance signal and a chroma signal are outputted as an S video signal through the buffer amplifier 28Y and 28C, respectively. Moreover, a composite signal is outputted through buffer amplifier 28V.
[0123] In addition, as this MPEG video decoder 25, the MPEG 2 decryption LSI of SGS-ThomsonMicroelectronics (STi3500) can be used. the outline -- Nikkei Business Publications "Nikkei electronics" 1994.3.14 [for example,] (no.603) -- the 101st page thru/or 110 pages -- Martin It is introduced by Mr. Bolton.
[0124] moreover, MPEG 2-Transportstream -- being related -- the "newest MPEG textbook" of ASCII incorporated company August 1, 1994 issue -- explanation is made by the 231st page thru/or 253 pages.
[0125] The MPEG audio decoder 26 makes DRAM26a memorize suitably the digital audio signal supplied from the demultiplexer 24, and performs decoding of the audio signal compressed by the MPEG method. In D/A converter 30, D/A conversion of the decoded audio signal is carried out, the audio signal of a left channel is outputted through buffer amplifier 31L, and the audio signal of a right channel is outputted through buffer amplifier 31R.
[0126] RF modulator 41 changes and outputs the composite signal which the NTSC encoder 27 outputs, and the audio signal which D/A converter 30 outputs to a RF signal. Moreover, when TV mode is set up, this RF modulator 41 carries out through [of the RF signal of the NTSC system inputted from AV equipments such as a cable box,], and outputs it to VCR or other AV equipments

(neither is illustrated) as it is.
[0127] In the case of this example, these video signals and audio signals will be supplied to a monitoring device 4.
[0128] CPU (Central Processing Unit)29 performs various kinds of processings according to the program memorized by ROM37. For example, a tuner 21, the QPSK demodulator circuit 22, the error correction circuit 23, etc. are controlled. Moreover, AV equipment control signal transceiver section 2A is controlled, and a predetermined control signal is outputted to other AV equipments (in the case of this example monitoring device 4) through the control line 12, and the control signal from other AV equipments is received.
[0129] To this CPU29, the actuation button switch (drawing 22) of the front panel 40 can be operated, and the direct input of the predetermined command can be carried out. Moreover, if a remote commander 5 (drawing 24) is operated, outgoing radiation of the infrared signal will be carried out from that IR dispatch section 51, this infrared signal will be received by the IR receive section 39, and a light-receiving result will be supplied to CPU29. Therefore, a predetermined command can be inputted into CPU29 also by operating a remote commander 5.
[0130] Moreover, a demultiplexer 24 incorporates EPG data etc. in addition to the MPEG video data supplied from a front end 20, and audio data, and EPG area 35A of the data buffer memory 35 is made to supply and memorize it. EPG information includes the information (for example, a channel besides the still picture of a program, broadcasting hours, a title, a category, etc.) about the program of each broadcast channel by 24 hours or 150 hours after current time (in the case of EPG2 and EPG 1-2) (in the case of EPG2, EPG3, EPG 1-2, and EPG 1-3). Since this EPG information is transmitted frequently, it can always hold the newest EPG to EPG area 35A.
[0131] The data (for example, the receiving hysteresis for 4 week of a tuner 21, a power source channel number received just before [off] (last channel)) which want to hold after power-source off are suitably memorized by EEPROM (Electrically Erasable Programable Read Only Memory)38. And for example, when a power source is turned on, the same channel as a last channel is made to receive again. When the last channel is not memorized, the channel memorized by ROM37 as a default is received.
[0132] Moreover, when the sleep mode is set up, even if it is CPU29 at the power-source OFF time, a front end 20, a demultiplexer 24, the data buffer memory 35, etc. make a minimum circuit operating state, and it clocks current time from the time information included in an input signal, and performs control which makes each circuit carry out predetermined actuation to predetermined time of day. For example, external VCR is interlocked with and a timer automatic image transcription is performed.
[0133] Furthermore, CPU29 controls the MPEG video decoder 25 to generate predetermined OSD (On-Screen Display) data. The MPEG video decoder 25 generates predetermined OSD data corresponding to this control, writes them in OSD area 25aA (drawing 28) of DRAM25a, is read further and outputted. a predetermined alphabetic character by this, a graphic form, an image (for example, still picture of the alphabetic character on which the usual screen is overlapped in drawing 3 thru/or drawing 10 , a station LOGO, a genre icon, and a program window), etc. -- etc. -- it can be made to output and display on a monitoring device 4 suitably
[0134] SRAM36 is used as work-piece memory of CPU29. A modem 34 delivers and receives data through the telephone line under control of CPU29.
[0135] Drawing 24 expresses the example of a configuration of the button switch of a remote commander 5. The select button (decision key) switch 131 is made as [carry out / perpendicularly / to the top face of a remote commander 5 / depression actuation (selection actuation)]. The rise button switch (upper key) 135, the down button switch (bottom key) 136, the left button switch (left key) 137, and the light button switch (right key) 138 are operated when moving cursor etc. vertically and horizontally (when carrying out direction actuation). The menu button switch 134 is operated when displaying a menu screen on a monitoring device 4.

[0136] In the number of the broadcast channel to receive, the channel up-and-down button switch 133 is operated, when risen or downed. The BORIUMU button switch 132 is operated when rising or bringing down BORIUMU.

[0137] The figure carbon button (ten key) switch 138 with which the figure of 0 thru/or 9 is displayed is operated when inputting the figure currently displayed. When actuation of the figure button switch 138 is completed, the channel selection button switch 158 is the semantics which shows figure input termination and that the inputted figure is a thing showing a channel, and is operated following it. The promo channel button switch 157 is operated when tuning in a promotion channel. The race card button switch 144 is operated when displaying a data stream as shown in drawing 4 , and the information button switch 145 is operated when displaying an information screen as shown in drawing 7 .

[0138] The input change-over button switch 154 is operated when switching the input to IRD2. If the silence button switch 151 is operated, mute will be carried out [voice], and mute will be canceled if it is operated again. The television power-source button switch 152 and the power-source button switch 153 are operated when a monitoring device (television receiver) 4 or the power source of IRD2 is turned on or turned off.

[0139] Drawing 25 expresses other examples of arrangement of a button switch. In this example, the select button switch 131 is arranged at the lower right of the rise button switch 135 thru/or the light button switch 138.

[0140] Drawing 26 expresses the example of a configuration inside a remote commander 5. CPU72 which constitutes a microcomputer 71 always scans the button switch matrix 82, and detects actuation of the remote commander 5 shown in drawing 24 of various kinds of button switches.

[0141] CPU72 performs various kinds of processings, and makes RAM74 memorize required data suitably according to the program memorized by ROM73.

[0142] When outputting an infrared signal, CPU72 drives LED76 and makes an infrared signal output through the LED driver 75.

[0143] drawing 27 -- a video data, audio data, and SI data (EPG data are included) -- a packet -- after being-izing and transmitted, signs that it gets over by IRD2 are expressed typically. In the encoder of a transmitting side, as shown in drawing 27 , SI data, a video data, and audio data are packet-ized, and it transmits to the 12.25GHz - 12.75GHz high power transponder for BSS bands carried in the satellite. In this case, the packet of the channel of plurality (a maximum of ten pieces) is multiplexed and transmitted to the signal of the predetermined frequency currently assigned to each transponder. That is, each transponder will transmit the signal of two or more broadcast channels by one subcarrier (transmission channel). If it follows, for example, there is the 23 number of transponders, transmission of the data of the broadcast channel of a maximum of 230 (= 10x23) individual will be attained.

[0144] In IRD2, the subcarrier of one frequency corresponding to one transponder predetermined by the front end 20 is received, and it restores to this. Thereby, the packet data of a maximum of ten broadcast channels (in the case of an example five broadcast channels) are obtained. And a demultiplexer 24 makes the data buffer memory 35 once memorize each packet obtained from this recovery output, and reads it to it. EPG area 35A is made to memorize a part for the data division except a header about SI packet containing EPG data. A video packet is memorized by DRAM25a and decoding is carried out in the MPEG video decoder 25. An audio packet is memorized by DRAM26a and decoding is carried out in the MPEG audio decoder 26.

[0145] In each transponder, scheduling is performed so that a transfer rate may become the same. The transmission speed per [which is assigned to each transponder] subcarrier is 30 Mbits/sec.

[0146] For example, in the case of the intense image of a motion, an MPEG video data occupies many packets like a sports program. For this reason, if such a program increases, the number of the programs which can be transmitted by one transponder will decrease.

[0147] On the other hand, the MPEG video data of an image with few motions can be transmitted by

few packets like the scene of an announcement of a news program. For this reason, when there are many such programs, the number of the programs which can be transmitted by one transponder becomes large.

[0148] Drawing 28 expresses typically processing of data until it displays the screen of a race card on a monitoring device 4.

[0149] CPU29 sets up beforehand the data transfer point inputted into register 24a built in the demultiplexer 24 from a front end 20. And once the data supplied from the front end 20 are memorized by the data buffer memory 35, they are read by the demultiplexer 24 and transmitted to the destination set as register 24a.

[0150] As mentioned above, the header is added to each packet, and a demultiplexer 24 supplies an MPEG video data to the MPEG video decoder 25 with reference to this header, and transmits MPEG audio data to the MPEG audio decoder 26. Moreover, when PID (Packet ID) contained in the header is SDT and EIT, these EPG data (SI data) are memorized to the predetermined address of EPG area 35A set as register 24a.

[0151] In addition, since a header becomes unnecessary when this transfer is completed, it is discarded.

[0152] Thus, when [for example,] having received the electric wave from the usual transponder (transponders other than the guide transponder for promotion channels), Although program detail explanation (the contents of a program) of the contraction still picture data of a 24 hours after [the current time for 80 (37) broadcast channel], program approximate account data (race card), a current program, and the following program is incorporated to EPG area 35A This EPG data is made possible [usually receiving also from the transponder of a throat]. That is, the same EPG data are usually transmitted also from the transponder of a throat.

[0153] On the other hand, when having received the electric wave from a guide transponder, the contraction still picture data of a 150 hours after [the current time for 80 (37) channels], program approximate account data, and the program detail explanation data of a 70 hours after are incorporated (when having received the promotion channel).

[0154] CPU29 is the broadcast channel (for example, it sets for the example of drawing 4) of the viewing area 250 predetermined from all these EPG tables 240. In the example of five broadcast channels and drawing 8 Time amount of the predetermined range of 15 broadcast channels (in the example of drawing 4) The data of the program of the time amount of about 4 hours after [current time] are read from EPG area 35A, and it is made to write in OSD area 25aA of DRAM25a as bit map data in the example of current time and drawing 8 . And EPG, such as a contraction still picture (drawing 4) and a whole race card (drawing 8), can be displayed on a monitoring device 4 with the MPEG video decoder 25 reading the bit map data of OSD area 25aA, and outputting to a monitoring device 4.

[0155] The MPEG video decoder 25 can carry out decoding also of the image data compressed by the JPEG method. However, the magnitude of the screen is processed as a thing of the usual magnitude. Then, after CPU29 incorporates the decoded still picture data and changes them into the magnitude of a reduced screen, it outputs the data to the MPEG video decoder 25 again, and is made to display it as a reduced screen using the OSD function.

[0156] When displaying an alphabetic character etc. as OSD data, since the alphabetic data memorized by EPG area 35A is compressed, it performs processing returned using a dictionary. For this reason, the compressed code conversion dictionary is memorized by ROM37.

[0157] The conversion table (address translation table) of a character code and the storing location of the bit map data of a font is memorized by ROM37 again. By referring to this translation table, the bit map data corresponding to a predetermined character code can be read, and it can write in OSD area 25aA. Of course, these bit map data itself are memorized by ROM37 to the predetermined address.

[0158] It is Logo while the Logo data (various kinds of LOGO data containing a category LOGO and

a station LOGO) for displaying Logo (LOGO) on ROM37 are memorized, when not transmitting Logo (LOGO) data furthermore. The translation table of the address for calling the Logo data (bit map data) corresponding to ID and its ID is memorized. Logo When ID is found, it is made as [display / on a monitoring device 4 / Logo showing the category of each program etc.] by reading the Logo data memorized to the address corresponding to the ID, and writing in OSD area 25aA. That is, when transmitted, LOGO data are superimposed by super in POZA 333-1 of drawing 2 thru/or 333-4, and are transmitted from a transmitting side, but when it is made not to be transmitted, the ID is transmitted and the bit map data corresponding to ID are read from ROM37.

[0159] In the condition of indicating the usual program by reception as mentioned above at the monitoring device 4, actuation of the race card button switch 144 of a remote commander 5 displays the data stream which consists of five reduced screens on the display screen of a monitoring device 4, as shown in drawing 4 . Cursor is displayed on the predetermined reduced screen in this data stream. By operating the left button switch 137 or the light button switch 138, this cursor can be moved to right and left. In the reduced screen to which cursor was moved, in order to make the whole screen more legible, a genre icon is eliminated. And the genre icon of a program in which cursor is located, a station LOGO, and a title are displayed on a title bar.

[0160] If a user operates the select button switch 131 further, CPU29 will control a tuner 21 to receive the program in which cursor is then located. Thereby, the image of the program which carried out selection assignment is greatly displayed by the monitoring device 4 (in the usual magnitude).

[0161] On the other hand, if the information button switch 145 of a remote commander 5 is operated in the condition that the data stream is displayed as shown in drawing 4 , the more detailed information on a program (information screen) that cursor is then located will be displayed as shown in drawing 7 . That is, while a genre icon, a station LOGO, and a title are displayed on a title bar, a still picture is displayed more greatly than the case in drawing 4 . Furthermore, the broadcast time of this program, a performer, a contents explanatory note, etc. are displayed. A user can see this display and can grasp the outline of the contents of that program.

[0162] In the condition that the information screen as a user shows to drawing 7 is displayed, actuation of the select button switch 131 receives and displays the program.

[0163] Although the above is actuation in the case of having the function in which IRD2 processes a static image, if the race card button switch 144 of a remote commander 5 is operated when it is constituted for example, as IRD2 shows drawing 29 (when it does not have the function to process a still picture but has the function to mainly process only an alphabetic character (character)), a whole race card as shown in drawing 8 will be displayed on a monitoring device 4 in written form. If the rise button switch 135 thru/or the light button switch 138 are operated, cursor is moved onto the predetermined broadcast channel of the whole race card currently displayed on drawing 8 and the select button switch 131 is operated, as shown in drawing 9 , the race card of the broadcast channel will be displayed on a monitoring device 4.

[0164] When cursor is moved on the program of the predetermined present and the select button switch 131 is operated, CPU29 controls a tuner 21 and makes the program receive in the condition that the whole race card as shown in drawing 8 is displayed.

[0165] Drawing 30 expresses the example of processing at the time of operating various kinds of button switches of a remote commander 5. In step S1, it is judged whether the figure button switch 138 and the channel selection button switch 158 were operated, whether the race card button switch 144 was operated in step S2, and whether the information button switch 145 was operated [in / again / step S3]. Furthermore, in step S4, it is judged in whether the rise button switch 135 thru/or the light button switch 138 were operated, whether the select button switch 131 was operated in step S5, and step S6 whether the promo channel button switch 157 was operated. Furthermore, it is judged in step S7 whether other button switches were operated.

[0166] In step S1, the figure button switch 138 and when it is judged with the channel selection

button switch 158 having been operated following it, it progresses to step S8 and processing which tunes in the channel corresponding to the figure is performed. That is, CPU29 controls a tuner 21 and makes the channel of the number corresponding to the inputted figure receive.
[0167] In step S2, when judged with the race card button switch 144 (1st actuation means) having been operated, it progresses to step S9 and race card processing is performed. About the detail of this race card processing, it mentions later with reference to drawing 31 .
[0168] In step S3, when judged with the information button switch 145 having been operated, it progresses to step S10, and information screen-display processing is performed. About the detail of this information screen-display processing, it mentions later with reference to drawing 35 .
[0169] In step S4, when judged with either the rise button switch 135 thru/or the light button switch 138 having been operated, it progresses to step S11 and processing which moves cursor in the direction corresponding to the actuation is performed.
[0170] In step S5, when judged with the select button switch 131 having been operated, it progresses to step S12 and selection processing corresponding to the condition that cursor is then located is performed.
[0171] In step S6, when judged with the promo channel button switch 157 having been operated, it progresses to step S13 and processing which chooses a promotion channel is performed. That is, CPU29 controls a tuner 21 and makes a promotion channel receive.
[0172] In step S7, when judged with other button switches having been operated, it progresses to step S14 and processing corresponding to the operated button switch is performed.
[0173] Next, with reference to drawing 31 , the detail of race card processing of step S9 is explained.
[0174] First, data stream display processing of a genre is performed in step S21. Namely, CPU29 controls the MPEG video decoder 25, generates the OSD data of the data stream of a genre (in the case of an example news, a sport, a movie, a drama, a sound easy genre) as shown drawing 32 , and is outputted and displayed on a monitoring device 4. On the image of each genre, the genre icon which expresses a genre as the name of a genre is displayed.
[0175] Next, in step S22 thru/or S24, it is judged, respectively whether whether the left button switch 137 or the light button switch 138 of a remote commander 5 was operated, whether the select button switch's 131 having been operated, and the race card button switch 144 were operated.
[0176] In step S22, when judged with the left button switch 137 or the light button switch 138 having been operated, it progresses to step S26 and processing which moves cursor is performed.
[0177] That is, when displaying a data stream, CPU29 (still picture display-control means) displays cursor on the selection image of a predetermined genre, as shown in drawing 32 . When choosing a genre, a user is operating the left button switch 137 or the light button switch 138, and moves cursor the left or rightward. Whenever cursor operates these button switches once, it is moved onto the selection image one left-hand side or on the right-hand side of one.
[0178] When actuation in which cursor moves cursor the left or rightward further in the condition of being located on the selection image of a left end or a right end is made, a selection image is scrolled the right or leftward [one / every].
[0179] That is, for example, the left button switch 137 is operated in the condition that cursor is located on the genre of left end news, and if the command which moves cursor leftward further is inputted, a migration indication of the selection image of the genre of news will be given on the right-hand side of one. A migration indication also of the selection image of the genre of a sport is given on the right-hand side of one. Hereafter, similarly, a migration indication of every one selection image of each genre is given on right-hand side, and the selection image of the genre of a drama is displayed as a right end selection image. And the selection image of the genre of the music currently displayed on the right end till then is eliminated. The selection image of a new genre is displayed on the left end location where the selection image of the genre of news was displayed till

then.
[0180] the same -- the sound at the right end of drawing 32 -- if the light button switch 138 is operated in the condition that cursor is located on the selection image of an easy genre -- a sound -- a migration indication of the easy selection image of a genre is given on the left-hand side of one, and a migration indication also of a drama, a movie, and the selection image of each genre of a sport is hereafter given on left-hand side one by one. And the selection image of the genre of left end news will be eliminated, and the selection image of a new genre will be displayed on a right end location.
[0181] In step S23, when judged with the select button switch 131 (2nd actuation means) having been operated, it progresses to step S27 and the data stream of the program of the genre specified with cursor is displayed. For example, if the select button switch 131 is operated in the condition that cursor is located on the selection image of the genre of a movie as shown in drawing 32 , as shown in drawing 33 , the data stream of the program of a movie will be displayed. A sequential array indication of the still picture of programs, such as a movie 1 thru/or a movie 5, is given [the data stream top of the program of this movie] from left-hand side in the order of a broadcast channel band-like at right-hand side.
[0182] Drawing 34 is replaced with the data stream of a genre as mentioned above, and expresses typically general actuation in case the data stream of a program is displayed.
[0183] That is, as shown in this drawing, the data stream of the program of the genre (the genre B when it is the example of drawing 34) in which cursor is then located will replace with the data stream of a genre, and the selection image of Genre A thru/or Genre E will be displayed on it, if the select button switch 131 is operated by band-like in the condition of being indicated by the array. That is, the data stream of the program of Genre B is displayed in the example of drawing 34 . The still picture of the data stream of this program is arranged in order of the broadcast channel.
[0184] Next, in step S28 thru/or S31, the sequential judging of whether whether the left button switch 137 or the light button switch 138 was operated, whether the select button switch 131 was operated, whether the information button switch's 145 having been operated, and the race card button switch 144 were operated is carried out.
[0185] In step S28, when judged with the left button switch 137 or the light button switch 138 having been operated, it progresses to step S32 and cursor advance processing is performed. This cursor advance processing turns into the same processing as the case where cursor is moved on the data stream of the genre shown in drawing 32 . That is, if it is ordered cursor so that it may move the left or rightward further onto the still picture of the edge of the left-hand side on a data stream, or right-hand side, a still picture will be scrolled the right or leftward. If it is ordered the left or rightward in migration to the cursor located on still pictures other than an edge, cursor will move in the direction corresponding to the command.
[0186] Thus, if cursor is moved onto the still picture of a predetermined program, the display of a title bar will also be rewritten each time. That is, the genre icon of a program in which cursor is then located, a station LOGO, and a title are displayed on a title bar (drawing 33).
[0187] The genre icon is not displayed on the still picture. Thereby, a still picture becomes more legible and the check of a program becomes easy.
[0188] It is possible to make it also make it display on coincidence like this example rather than to to display the data stream of a genre and the data stream of a program separately. However, if it is made such, the viewing area of a data stream will become so large, and, originally the range in which the image of the program which is indicating by reception is hidden will become so large. Then, as shown in this example, it is desirable to display the data stream of a genre and a program separately.

[0189] In step S29, when judged with the select button switch 131 having been operated, it progresses to step S33 and processing which tunes in the program is performed.
[0190] For example, as shown in drawing 33 , when the select button switch 131 is operated in the

condition that cursor is located on the still picture of the program 1 of a movie, CPU29 controls a tuner 21 and controls it to receive this movie 1.
[0191] After program channel selection processing is performed in step S33, it progresses to step S25 and processing which eliminates the data stream of the program currently then displayed is performed. By this, the program which carried out selection assignment with cursor will be displayed on a monitoring device 4.
[0192] When judged with the information button switch 145 having been operated in step S30, it progresses to step S34, and information screen-display processing is performed. About this information screen-display processing, it mentions later with reference to drawing 35 .
[0193] In step S31, when judged with the race card button switch 144 not being operated, return and processing after it are repeated and performed to step S28. That is, it stands by until either the left button switch 137, the light button switch 138, the select button switch 131, the information button switch 145 or the race card button switch 144 is operated.
[0194] As shown in drawing 33 , when the race card button switch 144 is operated in the condition that the data stream of a program is displayed, it changes into the data stream of the genre shown in drawing 32 from the data stream of the program which shows return and a display to step S21 at drawing 33 from step S31. And processing after step S21 is repeated and performed.
[0195] On the other hand, as shown in drawing 32 , when it is judged with the race card button switch 144 having been operated in the condition that the data stream of a genre is displayed, in step S24, it progresses to step S25, and processing which eliminates the data stream of the genre is performed.
[0196] Next, with reference to the flow chart of drawing 35 , the detail of the information screen-display processing in step S10 of drawing 30 and step S34 of drawing 31 is explained.
[0197] First, it is judged in step S41 whether the information screen is already displayed. This information screen-display processing progresses to step S46, when the information screen is already displayed, since it is started when the information button switch 145 is operated, and processing which eliminates that information screen is performed.
[0198] In step S41, when judged with the information screen not being displayed yet, it progresses to step S42, and processing which displays an information screen is performed. Namely, CPU29 controls the MPEG video decoder 25, generates the OSD data of an information screen as shown in drawing 7 , and is outputted and displayed on a monitoring device 4. When the information screen button switch 145 is operated in the condition of viewing and listening to the usual program (in the case of the processing in step S10 of drawing 30), the information screen of the program to which it is viewing and listening then is displayed. On the other hand, when the information button switch 140 is operated during a data stream display as shown, for example in drawing 33 (in the case of the processing in step S34 of drawing 31), the information screen of a program then specified with cursor in the data stream is displayed.
[0199] For example, as shown in drawing 33 , when the information button switch 145 is operated in the condition that cursor is located on the still picture of the movie 1 of the genre of a movie, person information, such as broadcast time of the program and a performer, and a contents explanatory note are displayed with a still picture. Moreover, the same title bar as the case in a data stream is displayed on this information screen. By making the contents of a display of this title bar the same as that of the case in a data stream, the program chosen on the information screen can impress to a user that it is the same program as the program chosen by the data stream till then.
[0200] Next, in step S43, when judged with it having been judged and operated whether the rise button switch 135 or the down button switch 136 was operated, it progresses to step S47 and processing to which the contents explanatory note of an information screen (drawing 7) is scrolled is performed. When it does not exist so that a contents explanatory note scrolls, this scrolling processing will be performed substantially.
[0201] In step S43, when judged with the rise button switch 135 or the down button switch 136 not

being operated, it progresses to step S44, and it is judged whether the select button switch 131 was operated. When judged with the select button switch 131 having been operated, it progresses to step S48 and channel selection processing of the program currently displayed on the information screen is performed. That is, CPU29 controls a tuner 21 and makes the program currently displayed on the information screen receive.

[0202] In step S45, when judged with the information button switch 145 not being operated, return and processing after it are repeatedly performed by step S43. That is, it stands by until the rise button switch 135, the down button switch 136, the select button switch 131, or the information button switch 145 is operated.

[0203] In step S45, when judged with the information button switch 145 having been operated, it progresses to step S46, and processing which eliminates the information screen currently displayed now is performed.

[0204] As CPU29 is shown in the flow chart of drawing 36 , processing which writes in the still picture of each broadcast channel is performed to EPG area 35A of the data buffer memory 35, so that the display of the data stream classified for such every genre can be performed.

[0205] That is, first, in step S51, 1 is initialized to Variable i and a desired genre is chosen at step S52. For example, the genre of a movie is chosen. Next, it progresses to step S53 and a desired broadcast channel is chosen. For example, the 1st channel is chosen. Next, at step S54, processing which incorporates the i-th still picture (in the case of now the 1st) is performed. That is, if the program by which current broadcast is carried out by the 1st channel is a movie, the still picture of the program will be incorporated and it will be written in EPG area 35A.

[0206] Next, since selection about one broadcast channel was only still performed when it was judged whether it progressed to step S55 and same selection was performed about all broadcast channels and it was now, return and the following broadcast channel are chosen as step S53. That is, the 2nd channel is chosen. And it progresses to step S54, and in the 2nd channel, if the program currently broadcast now is a movie, this will be incorporated as 2nd still picture of the genre of a movie. If the program currently broadcast now is not a movie, since genres differ, the still picture is not incorporated here.

[0207] The above processing is similarly performed about all broadcast channels. That is, for example, when there is the 80 number of broadcast channels, the program by which current broadcast of [from the 1st channel to the 80th channel] is carried out is searched, and if the program is a movie, this will be incorporated one by one.

[0208] In step S55, when judged with retrieval of all broadcast channels having been completed, it progresses to step S56 and it is judged whether retrieval about all genres was performed. Since retrieval about a movie was only performed in now, return and the following genre, for example, music, are chosen as step S52. And in step S53, the 1st channel is chosen again, if the program currently now broadcast by the 1st channel at step S54 is a music program, this will be incorporated, and if it is not a music program, it will not be incorporated.

[0209] Next, it progresses to step S53 from step S55, and the 2nd channel is chosen, and this will be incorporated if the program currently now broadcast by the 2nd channel is a musical program.

[0210] the above processings repeat -- having -- step S55 -- a sound -- when judged with the retrieval about an easy program having been completed from the 1st channel to the 80th channel, it progresses to step S52 from step S56, for example, the genre of a sport is chosen, and same retrieval processing is performed about the program of a sport.

[0211] It is made above. A movie, music, a sport, a drama, a variety & special, Documentary, a culture & hobby, an animation & family, If the retrieval of a program like news, the weather, a program guide, information, shopping, a game, karaoke, an adult, and others by which current broadcast is carried out about all the genres classified beforehand was completed When judged in step S56, it progresses to step S57 and it is judged for Variable i whether it is maximum (that is, the retrieval about all the programs broadcast after current [which is transmitted as EPG] was

completed). When the still picture of the program broadcast after current time still remains, it progresses to step S58 from step S57, and only 1 increments Variable i, and processing after step S52 is performed. That is, retrieval same about the program broadcast by the degree of the program currently broadcast in current time is performed.

[0212] And in step S57, same processing is repeatedly performed until it is judged with the retrieval about all the future programs transmitted as EPG having been completed.

[0213] Thus, the still picture as EPG is classified for every genre, and it is arranged in order of a channel from the program broadcast now in each genre, and the program broadcast at further more late time of day is also arranged in order of a channel, and one by one, after that, as shown in drawing 37 , it is memorized. And the thing of the predetermined range of them is written in OSD area 25aA, is read from there, and is displayed as a data stream of a program.

[0214] Drawing 38 and drawing 39 express the example of a display of the genre icon of genres, such as these movies, music, a sport, a drama, a variety & special, documentary, a culture & hobby, an animation & family, news, the weather, a program guide, information, shopping, a game, karaoke, an adult, and others, the NHK synthesis television and the NHK educational television, Nippon Television, TBS television, Fuji Television, TV Asahi, TV Tokyo, and the station LOGO of WOWOW. In addition, these icons and LOGOs are prepared for the facilities of explanation, and are not necessarily used in actual broadcast.

[0215] In addition, in the above example, although each still picture was classified on the basis of the genre, it classifies on the basis of a broadcast channel, and displaying is also possible. In this case, CPU29 performs processing which writes still picture data in EPG area 35A by processing as shown in the flow chart of drawing 40 .

[0216] First, in step S71, 1 is initialized to Variable i and the first broadcast channel (the 1st channel) is chosen at step S72. Next, processing which incorporates the i-th still picture (in the case of now the 1st) is performed at step S73. That is, processing which incorporates the still picture of the program of the 1st channel by which current broadcast is carried out is performed.

[0217] Next, if it progresses to step S74, it judges whether the retrieval about all broadcast channels was ended and the retrieval about all broadcast channels is not ended, return and the 2nd channel are chosen as step S72, and processing which incorporates the still picture of a program with which current broadcast of the 2nd channel is carried out is performed in step S73.

[0218] The same processing is repeated, hereafter, when judged with retrieval of all broadcast channels having been completed in step S74, it progresses to step S75, and it judges whether Variable i became equal to MAX. That is, it judges whether the retrieval about all the programs broadcast from current time in the future among the programs transmitted as EPG was completed. If all programs are not searched, it progresses to step S76, only 1 increments Variable i, and return and same processing are repeated and performed to step S72.

[0219] Thus, the program broadcast at the degree of current time is incorporated one by one for every channel. And in step S75, same processing is repeatedly performed until it is judged with the retrieval about all the programs transmitted as EPG having been completed.

[0220] Thereby, as shown in drawing 41 , a still picture is classified for every broadcast channel, and in each broadcast channel, in order of time of day, a still picture collects into EPG area 35A, and is memorized. And the thing of the predetermined range of them is read and it is displayed as a data stream of a program.

[0221] Thus, when it incorporates with EPG data for every broadcast channel, in the data stream display process in step S21 of drawing 31 , it replaces with the display of the data stream of a genre, and the display of the data stream of a broadcast channel is performed. This replaces with the data stream of the genre shown in drawing 32 , and the data stream of a broadcast channel as shown in drawing 42 is displayed.

[0222] And in the condition that the data stream of such a broadcast channel is displayed, when judged with the select button switch 131 having been operated in step S23, it replaces with the

display of the data stream of the program of the genre as shown in drawing 33 in step S27, and the data stream of the program of the broadcast channel as shown in drawing 43 is displayed.
[0223] In the data stream of this program, the program of that broadcast channel is displayed on right-hand side in order from left-hand side in order of time of day. And the genre icon showing the genre of the program is superimposed and displayed on each still picture. However, when cursor is located, this genre icon is eliminated in order to make a still picture more legible. However, since the genre icon is displayed on a title bar, a user can recognize the genre of the program from the genre icon of the title bar.
[0224] In the above example, although various kinds of commands were inputted by operating a remote commander 5, it is also possible to carry out the direct control of the button switch formed in the transverse plane of IRD2, and to input a command. Moreover, it is also possible to use a pointing device like a joy stick for the control unit prepared in the remote commander 5 or the transverse plane of IRD2.
[0225] As mentioned above, although the case where this invention was applied to IRD2 was explained as an example, as for this IRD, it is possible to also make it build in a monitoring device 4 (television receiver) substantially. Moreover, this invention can be applied also in the set top box of cable television, VCR, a personal computer, etc.
[0226]
[Effect of the Invention] According to an electronic program guide display control according to claim 1 and the electronic program guide display-control approach according to claim 4, like the above Since it was made to switch to the condition of displaying the still picture of a predetermined category, from the condition of having displayed two or more category selection images The viewing area of an electronic program guide can be made small, the rate which interrupts the image of the program currently displayed from the first is lessened, and it becomes possible to choose a desired program quickly and certainly out of many programs.

[Translation done.]

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2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the example of a configuration of the sending set adapting this invention.
[Drawing 2] It is the block diagram showing the example of a configuration of the promotion channel generation equipment 302 of drawing 1 .
[Drawing 3] It is drawing showing the example of a display of a promotion channel.
[Drawing 4] It is drawing showing the example of a display of a data stream.
[Drawing 5] It is drawing showing the configuration of a title bar.
[Drawing 6] It is drawing showing the configuration of a program window.

[Drawing 7] It is drawing showing the example of a display of an information screen.
[Drawing 8] It is drawing showing the example of a display of a whole race card.
[Drawing 9] It is drawing showing the example of a display of a channel race card.
[Drawing 10] It is drawing showing the example of a display of program detail explanation (the contents of a program).
[Drawing 11] It is drawing explaining the range of a race card and the contents of a program.
[Drawing 12] It is drawing explaining transmission of the EPG information in a transponder.
[Drawing 13] It is drawing explaining EGP data.
[Drawing 14] It is drawing explaining the configuration of SDT.
[Drawing 15] It is drawing explaining the configuration of EIT.
[Drawing 16] It is drawing showing a format of a still picture.
[Drawing 17] It is drawing explaining the configuration of TDT.
[Drawing 18] It is drawing explaining the configuration of PAT.
[Drawing 19] It is drawing explaining the configuration of PMT.
[Drawing 20] It is the perspective view showing the example of AV structure of a system adapting this invention.
[Drawing 21] It is the block diagram showing the electrical installation condition of AV system of drawing 20 .
[Drawing 22] It is the front view showing the example of a configuration of the transverse plane of IRD2 of drawing 20 .
[Drawing 23] It is the block diagram showing the example of a configuration inside [of drawing 20] IRD2.
[Drawing 24] It is the top view showing the example of a configuration of the top face of the remote commander 5 of drawing 20 .
[Drawing 25] It is drawing showing other array conditions of the button switch of a remote commander 5.
[Drawing 26] It is the block diagram showing the example of a configuration inside the remote commander 5 of drawing 24 .
[Drawing 27] It is drawing explaining the outline of the processing in the encoder of a transmitting side, and processing of IRD2 which receives the output.
[Drawing 28] It is drawing explaining the EPG data memorized by EPG area 35A of drawing 23 .
[Drawing 29] It is the block diagram showing other examples of a configuration of IRD2.
[Drawing 30] It is the flow chart which shows the example of processing of a remote commander.
[Drawing 31] It is the flow chart which shows the detail of the race card processing in step S9 of drawing 30 .
[Drawing 32] It is drawing showing the example of a display of step S21 of drawing 31 .
[Drawing 33] It is drawing showing the example of a display of step S27 of drawing 31 .
[Drawing 34] It is drawing explaining a switch of the display corresponding to processing of drawing 31 .
[Drawing 35] It is the flow chart which shows the detail of the information screen-display processing in step S10 of drawing 30 , and step S34 of drawing 31 .
[Drawing 36] It is a flow chart explaining still picture write-in processing.
[Drawing 37] It is drawing showing the result of processing of drawing 36 .
[Drawing 38] It is drawing showing the example of a genre icon.
[Drawing 39] It is drawing showing the example of a station LOGO.
[Drawing 40] It is the flow chart which shows other examples of processing which write in a still picture.
[Drawing 41] It is drawing showing the result of write-in processing of drawing 40 .
[Drawing 42] It is drawing showing other examples of a display in step S21 of drawing 31 .
[Drawing 43] It is drawing showing other examples of a display in step S27 of drawing 31 .

[Description of Notations]
1 AV System
2 IRD
3 Parabolic Antenna
4 Monitoring Device
5 Remote Commander
21 Tuner
23 Error Correction Circuit
24 Demultiplexer
25 MPEG Video Decoder
25a DRAM
26 MPEG Audio Decoder
26a DRAM
29 CPU
35 Data Buffer Memory
35A EPG area
36 SRAM
37 ROM
38 EEPROM
39 IR Receive Section
131 Select Button Switch
144 Race Card Button Switch
145 Information Button Switch

[Translation done.]

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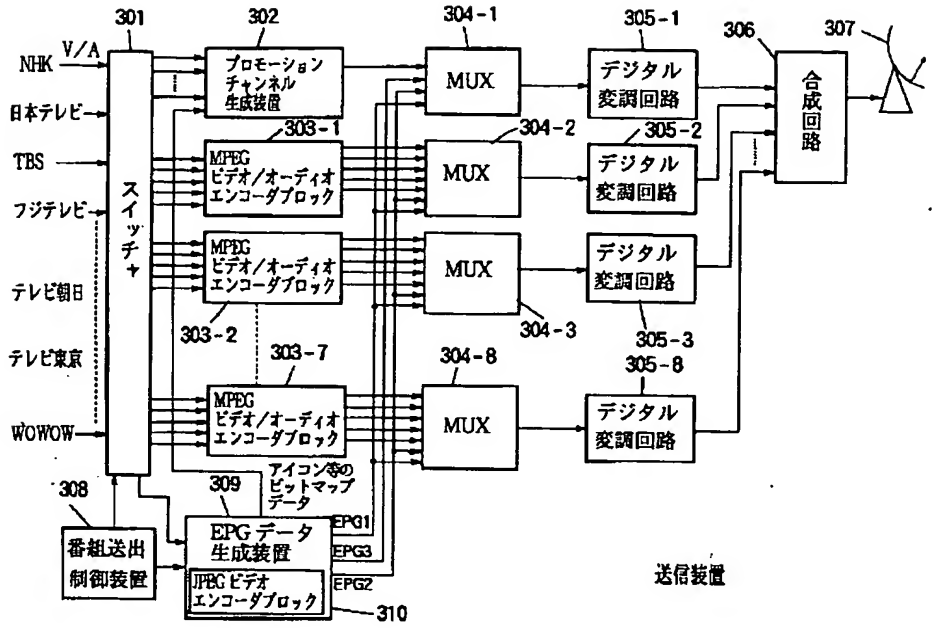
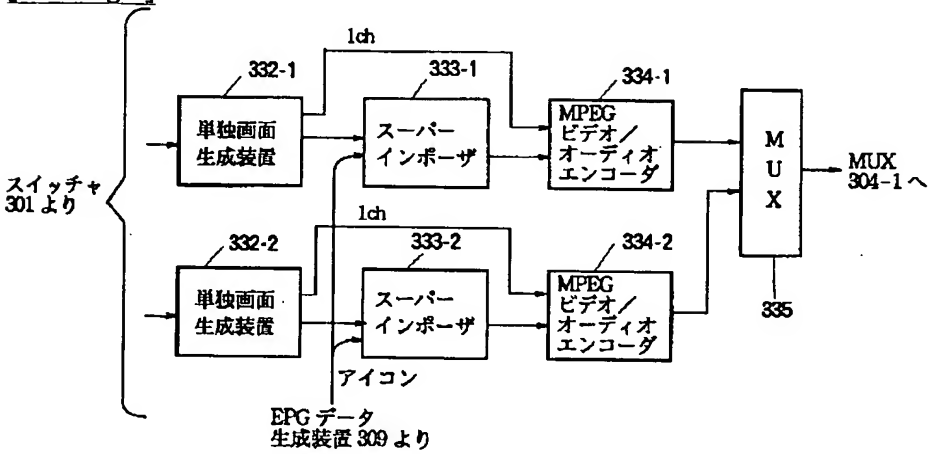
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

[Drawing 1]

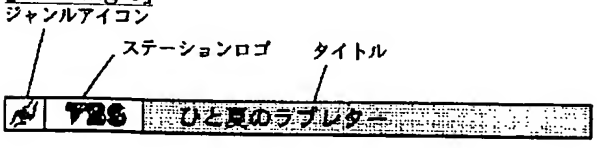


[Drawing 2]



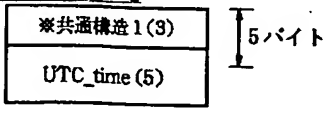
プロモーションチャンネル生成装置 302

[Drawing 5]



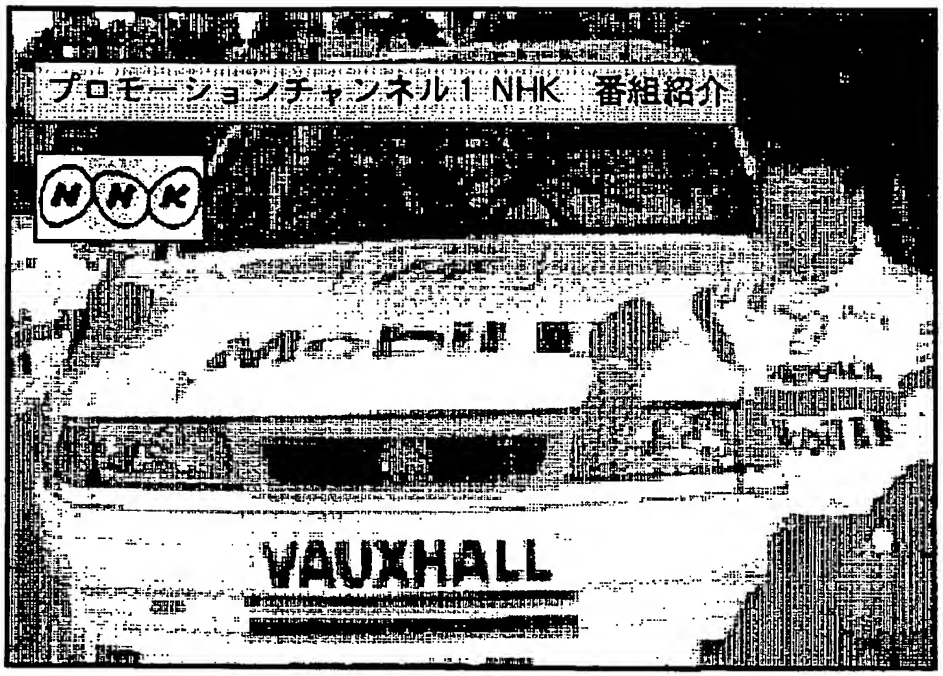
タイトルバー

[Drawing 17]

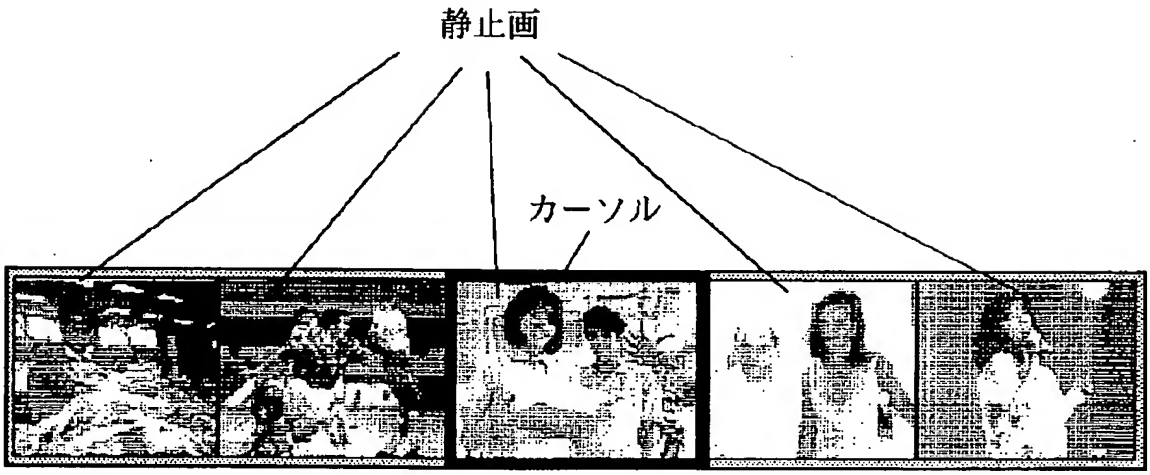


TDT (Time and Data Table)

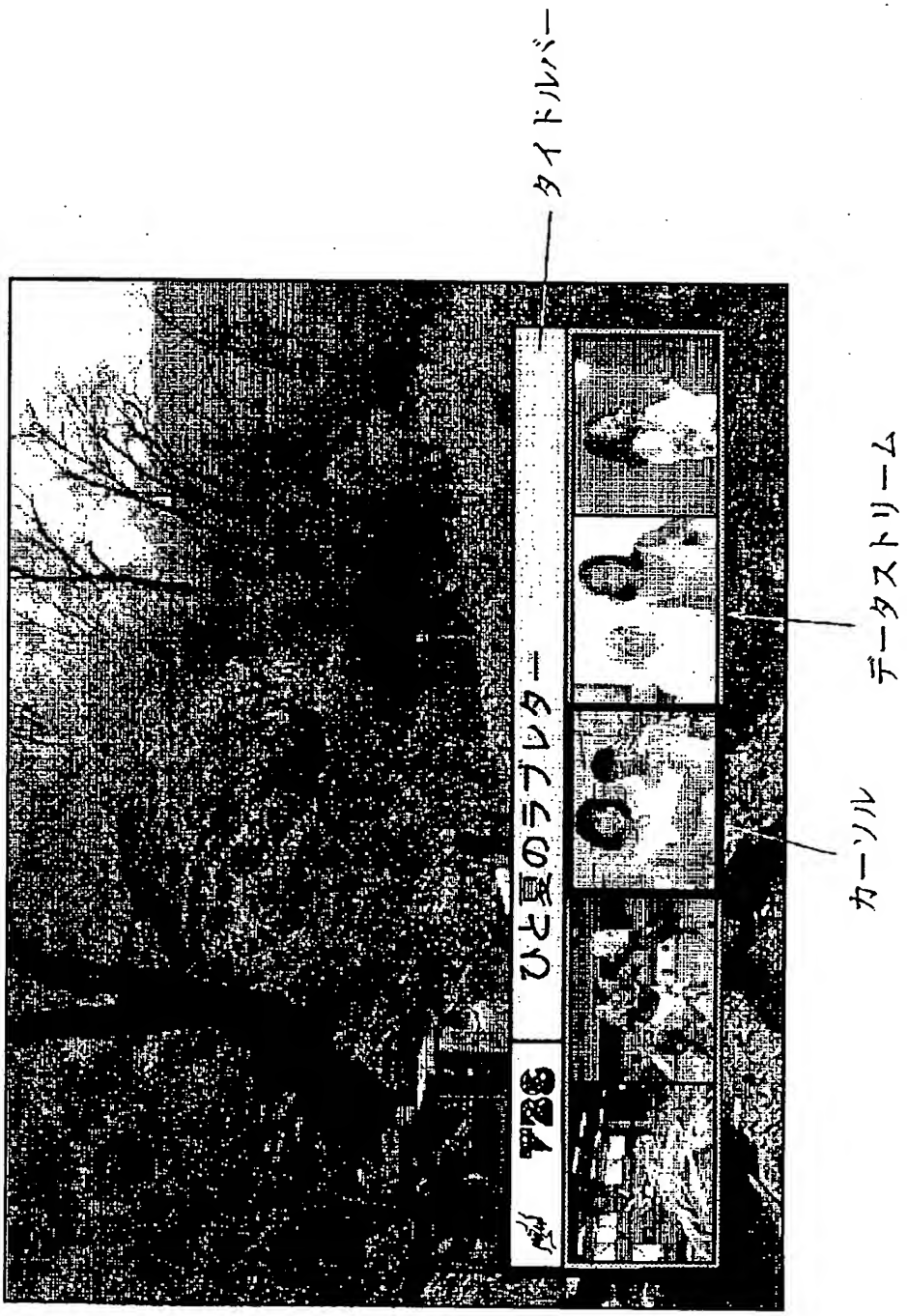
[Drawing 3]



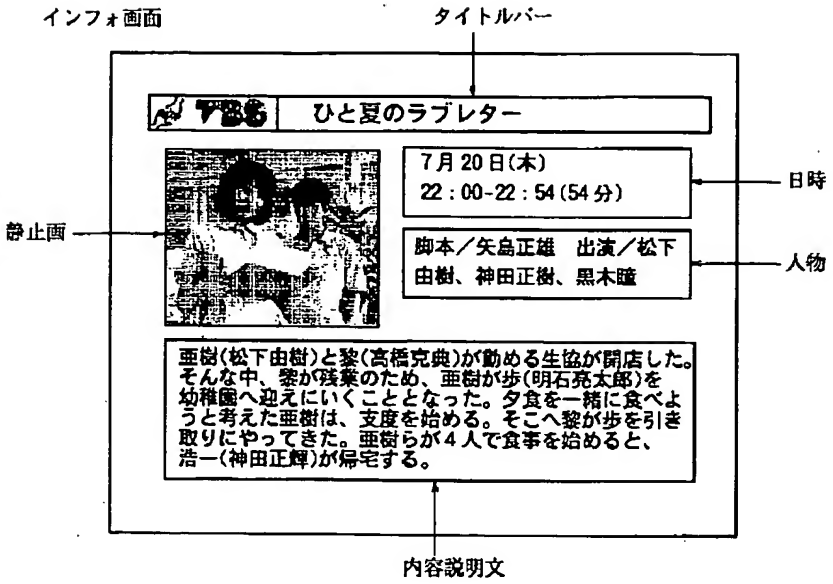
[Drawing 6]
番組ウインドウ



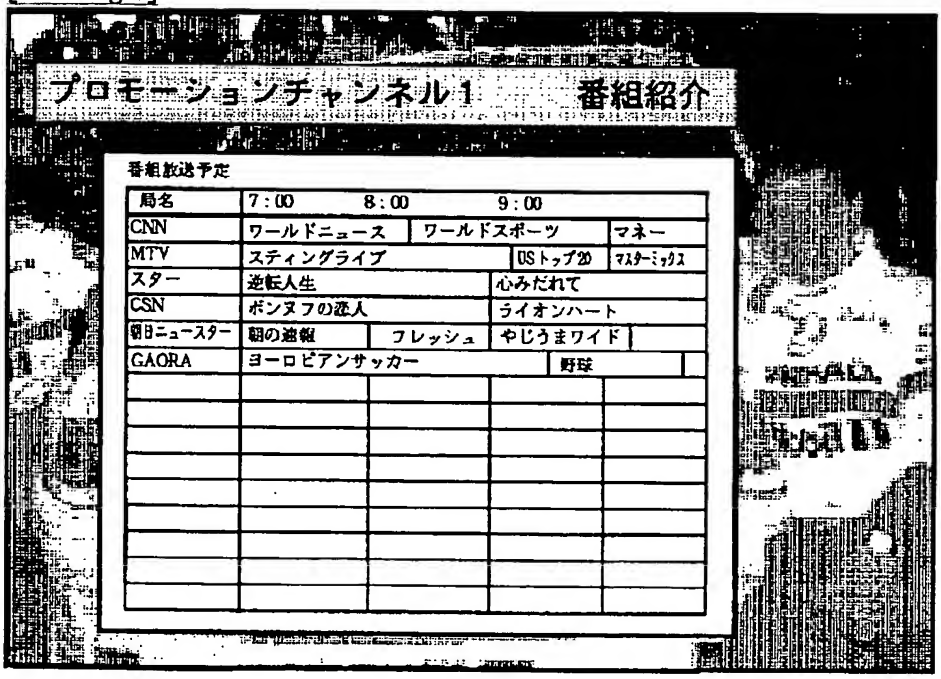
[Drawing 4]



[Drawing 7]

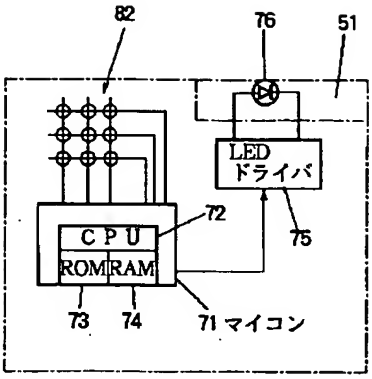


[Drawing 8]



全体番組表
（番組概略説明）

[Drawing 26]

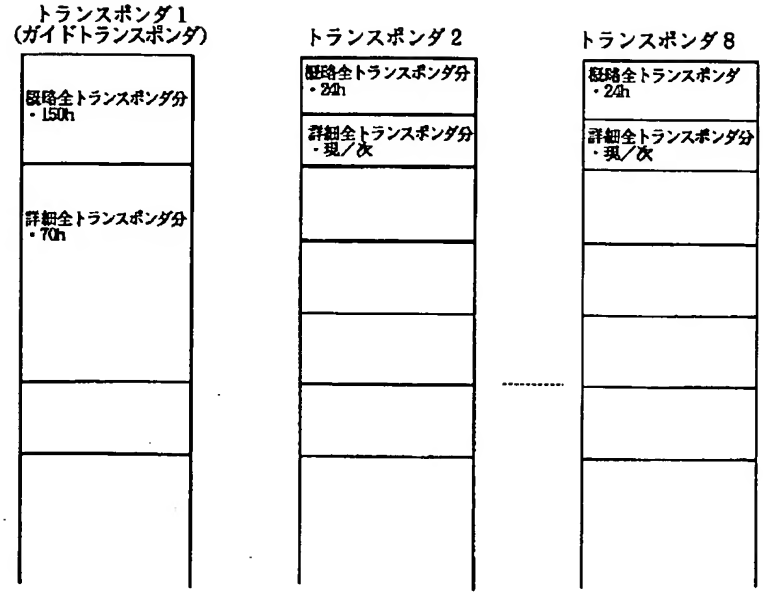


リモートコマンダ 5

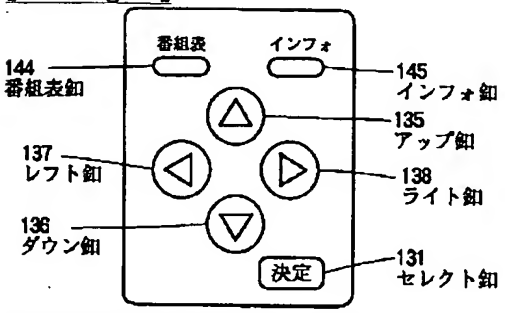
[Drawing 9]

チャンネル番組表
（番組概略説明）

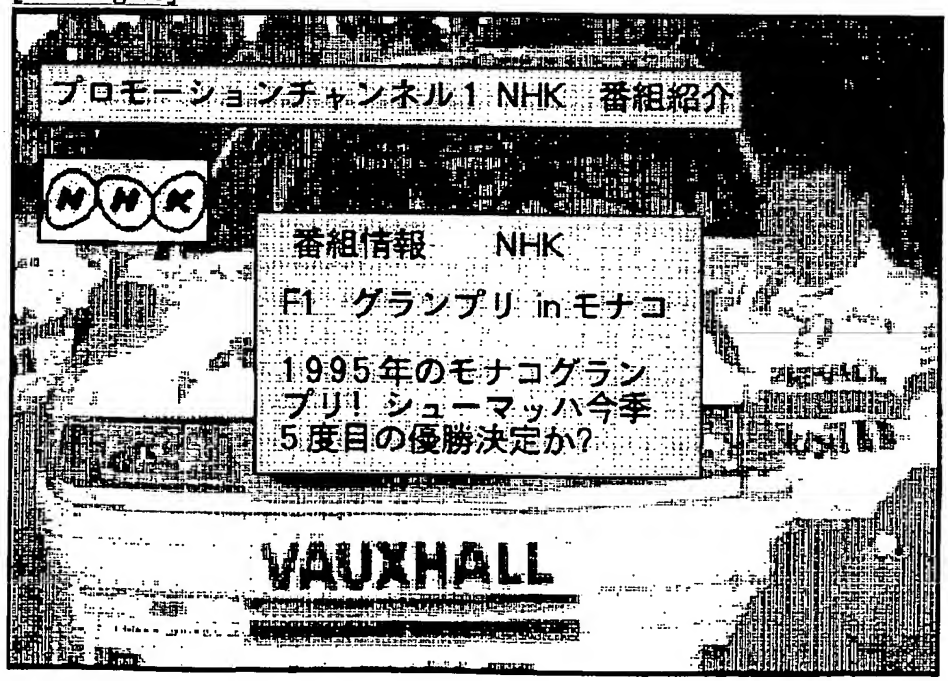
[Drawing 12]



[Drawing 25]



[Drawing 10]

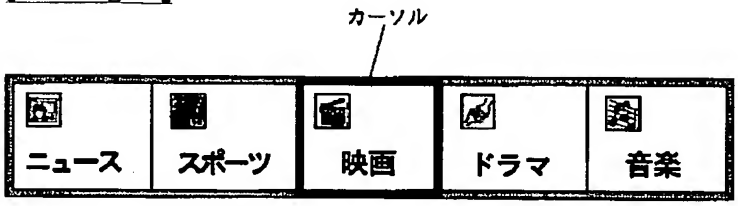


番組詳細説明.

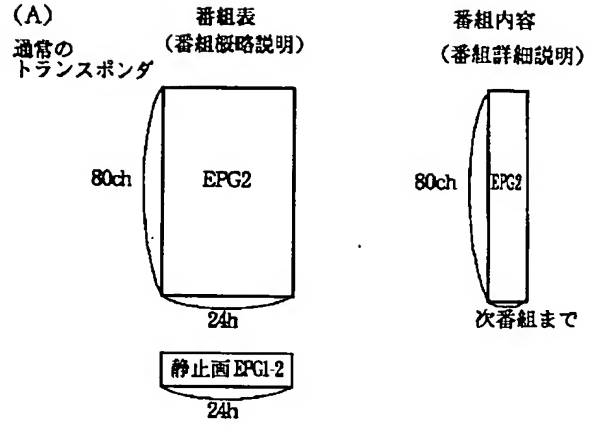
[Drawing 13]

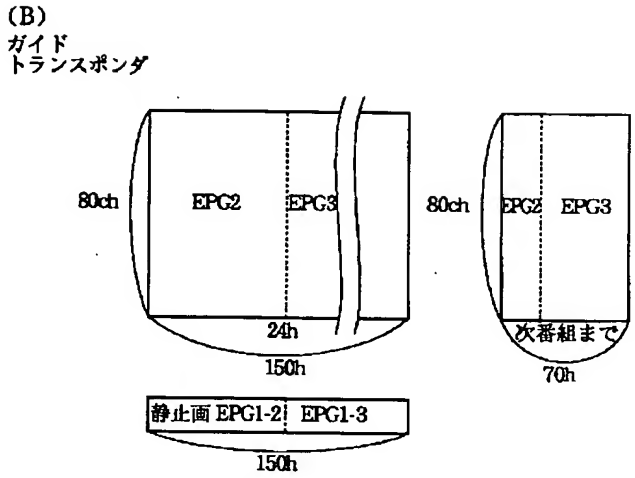
項目	(item,)descriptor(テーブル)	データ長	備考
サービス供給者	(service_provider)Service Descriptor(SDT)		
サービス名	(service_name)Service Descriptor(SDT)		
サービス型	(service_type)Service Descriptor(SDT)	1バイト	
タイトル	(event_name)Short Event Descriptor(EIT)	60バイト	
サブタイトル(型)	(Component Descriptor(EIT)	1バイト	データ未定義
現在日時	UTC_time(TDT)	5バイト	
番組開始時刻	start_time(EIT)	5バイト	
番組時間長(終了時刻)	End_time(EIT)	3バイト	
Parental Rate	Parental Rating Descriptor(EIT)	1(+3)バイト	国番号毎対応
価格			
映像モード	Component Descriptor(EIT)	1バイト	
提供言語	ISO639 language Descriptor(PMT)	3バイト	
提供音声モード	Component Descriptor(EIT)	1バイト	
カテゴリー	Content Descriptor(EIT)	2バイト	
番組概略説明	Short Event Descriptor(EIT)	64バイト	
番組詳細説明	Extended Event Descriptor(EIT)	256バイト	
プロモーション情報	Promotion Descriptor(SDT)		

[Drawing 32]

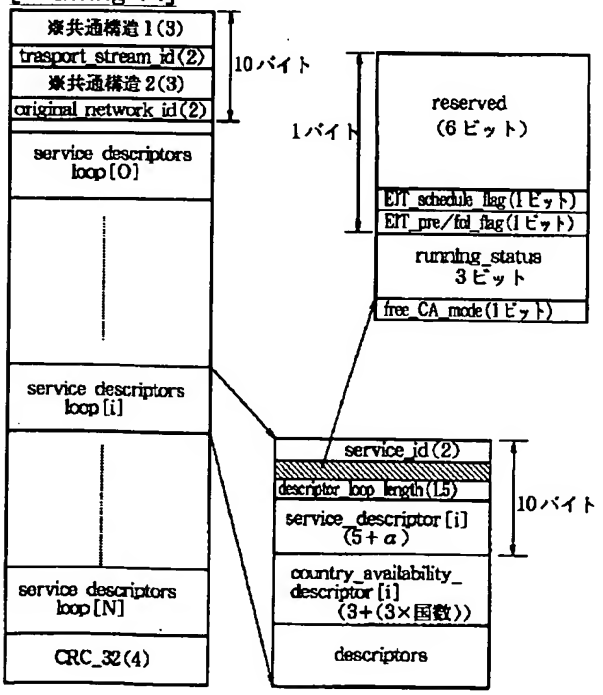


[Drawing 11]



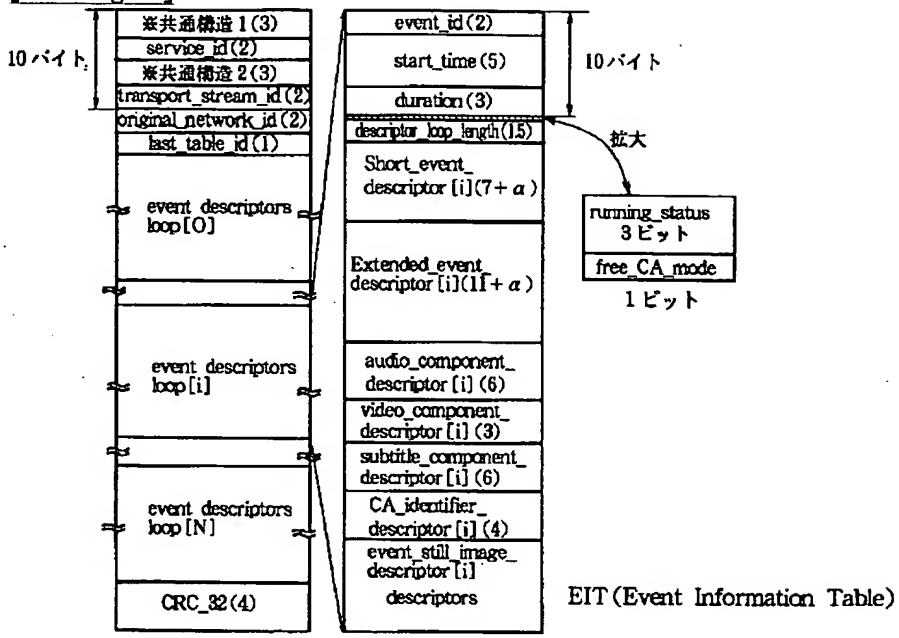


[Drawing 14]



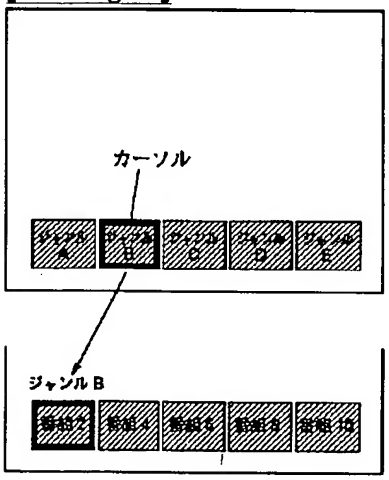
SDT (Service Description Table)

[Drawing 15]

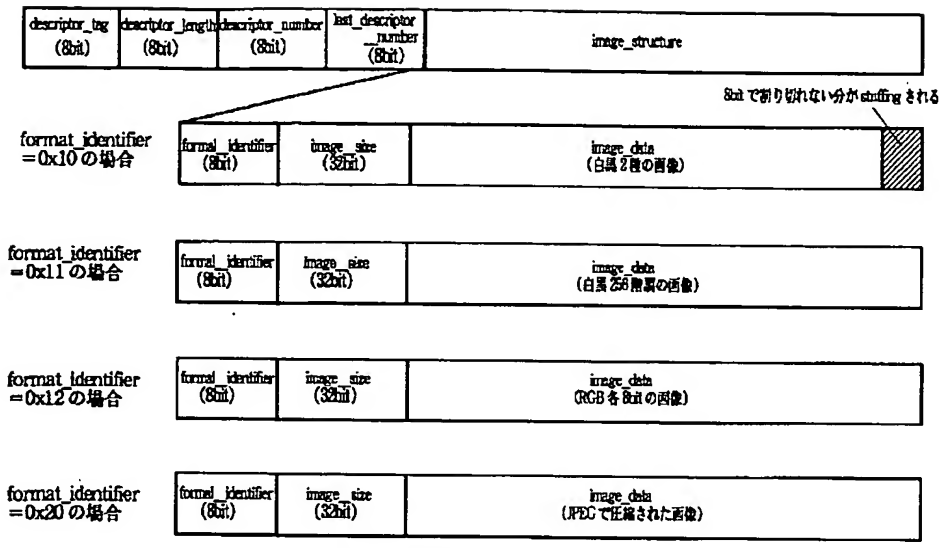


EIT (Event Information Table)

[Drawing 34]

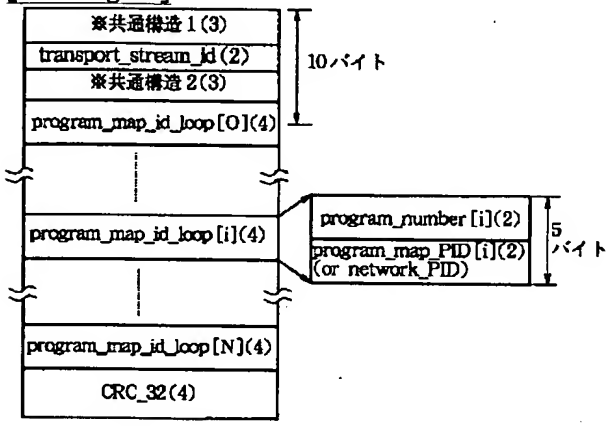


[Drawing 16]



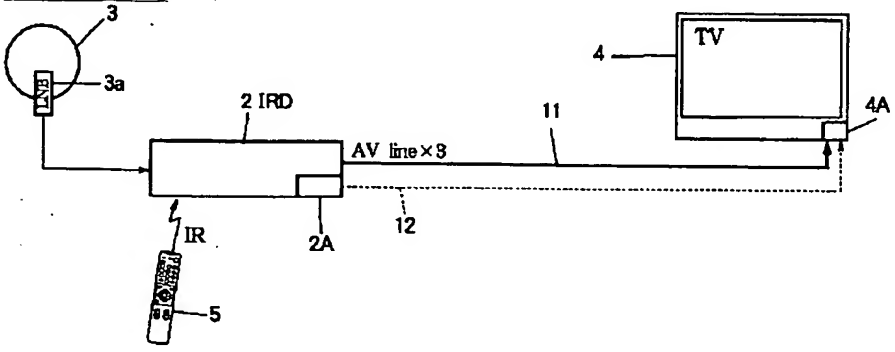
静止画のフォーマット

[Drawing 18]

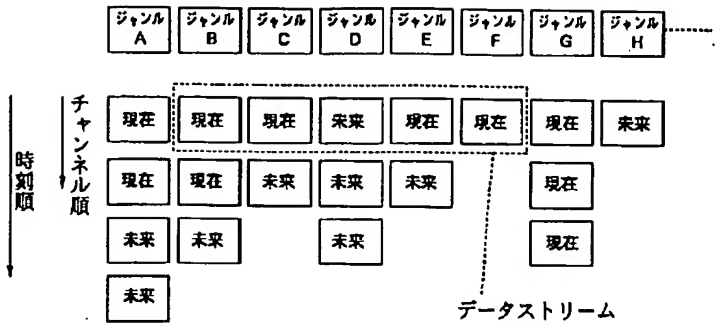


PAT(Program Association Table)

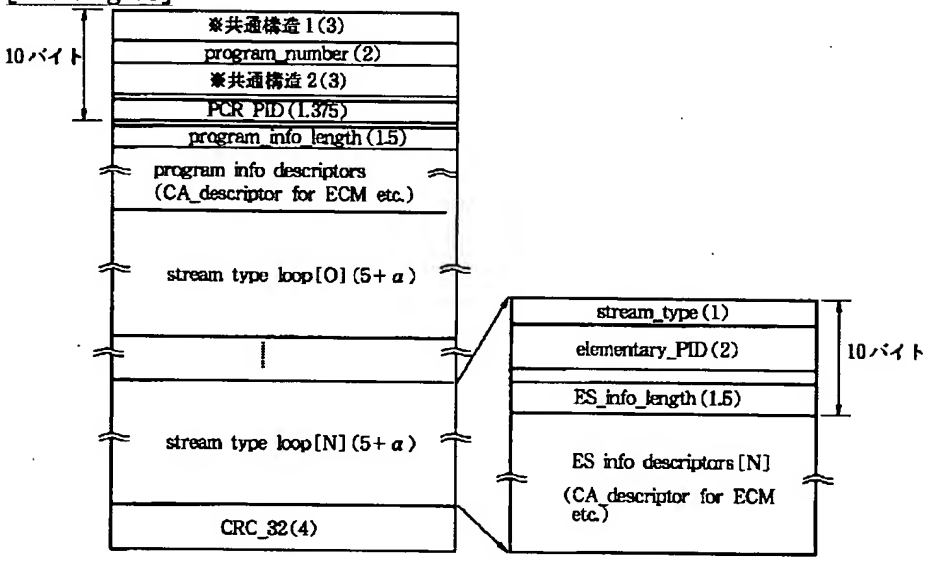
[Drawing 21]



[Drawing 37]

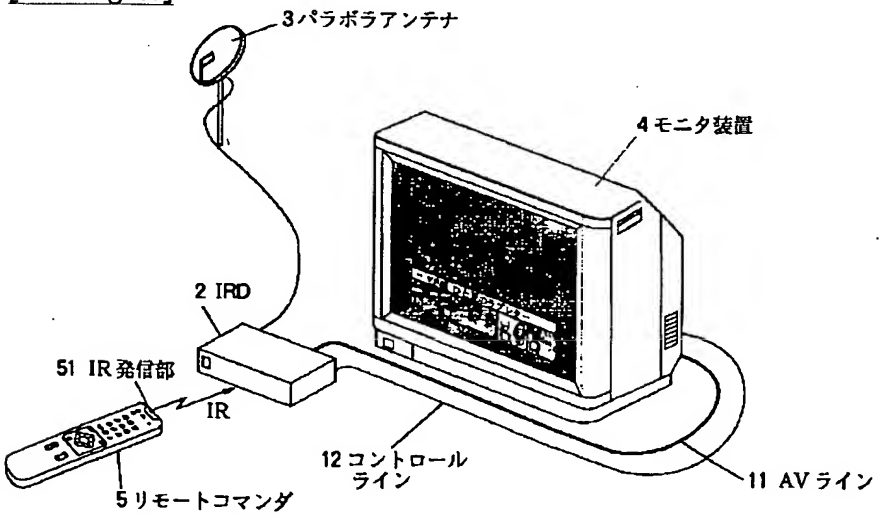


[Drawing 19]



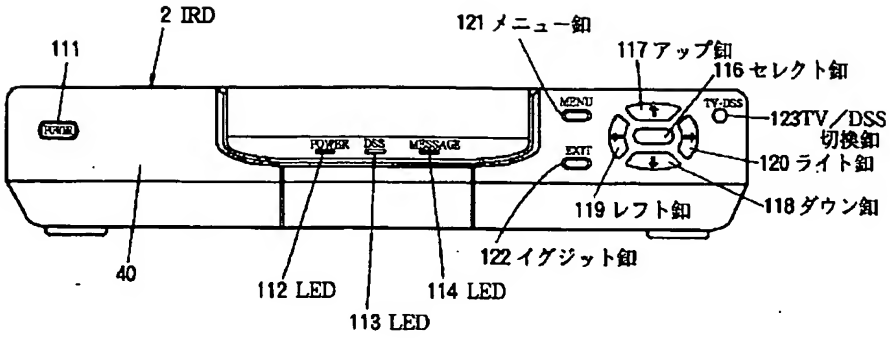
PMT(Program Map Table)

[Drawing 20]



AVシステム 1

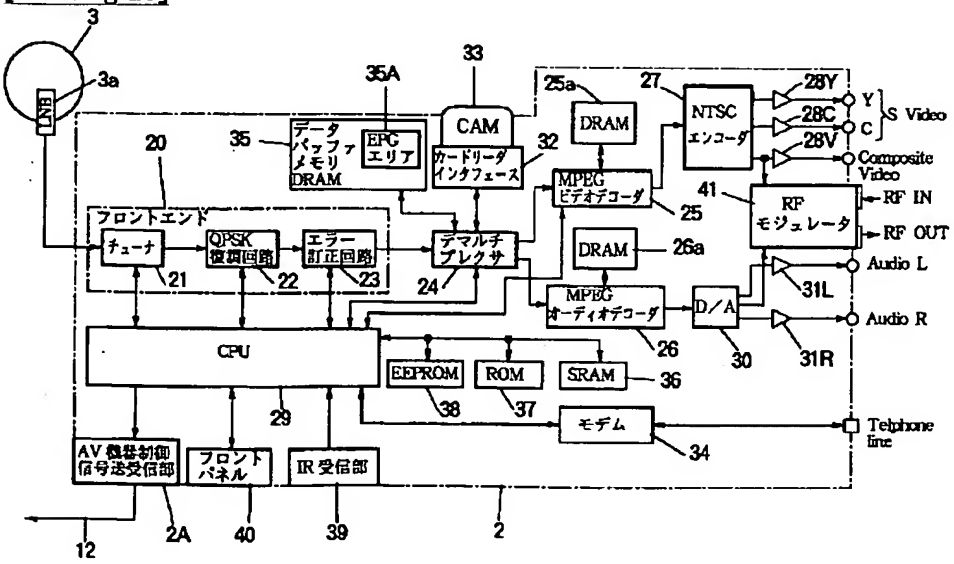
[Drawing 22]



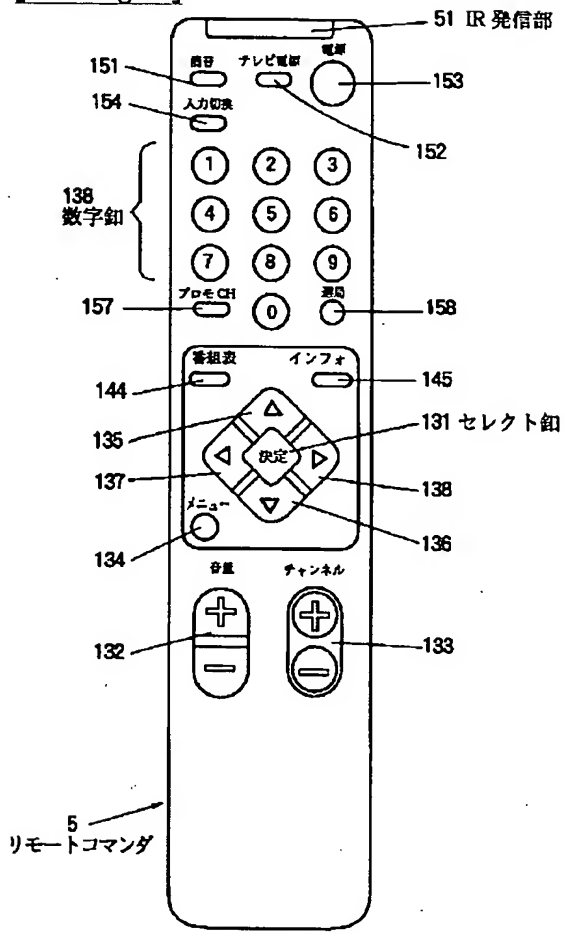
[Drawing 38]

ジャンルアイコンの例

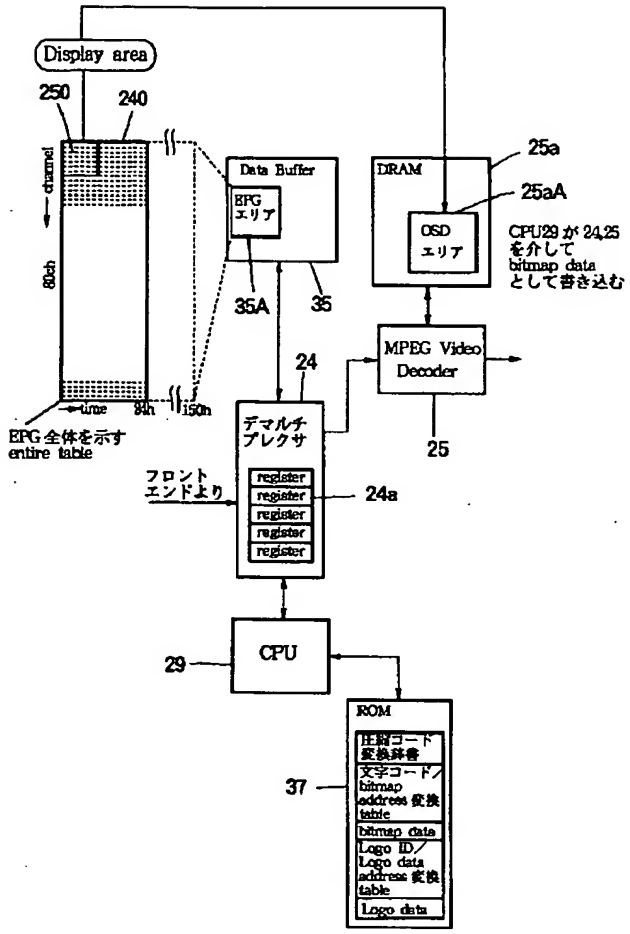
[Drawing 23]



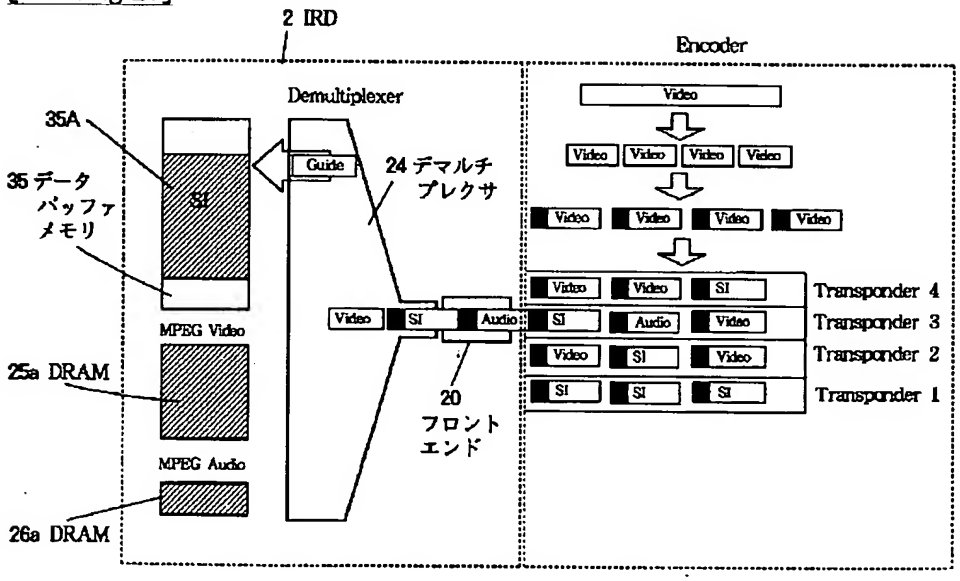
[Drawing 24]



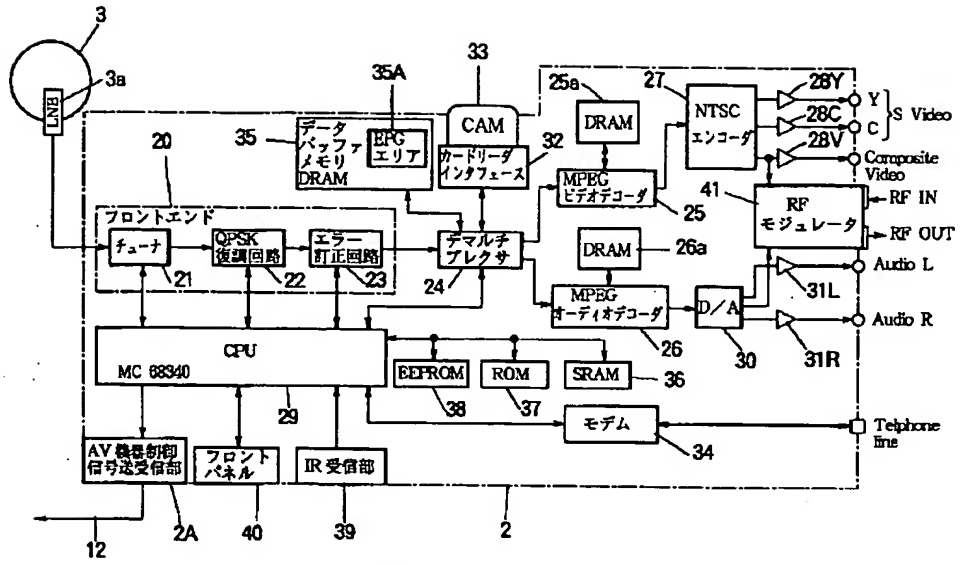
[Drawing 28]



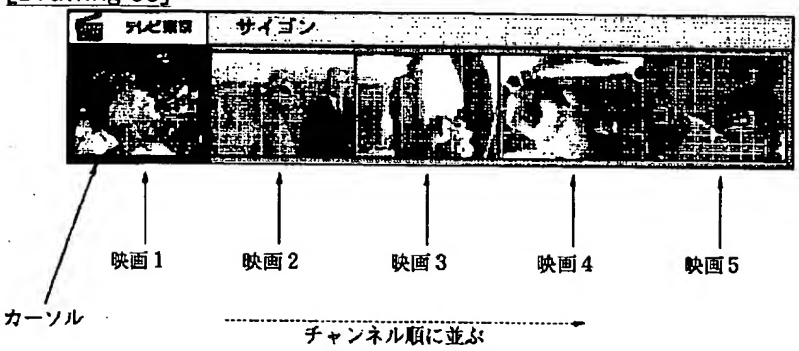
[Drawing 27]



[Drawing 29]

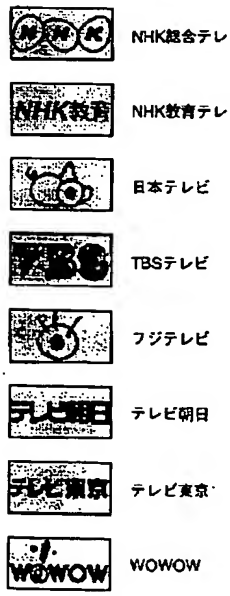


[Drawing 33]

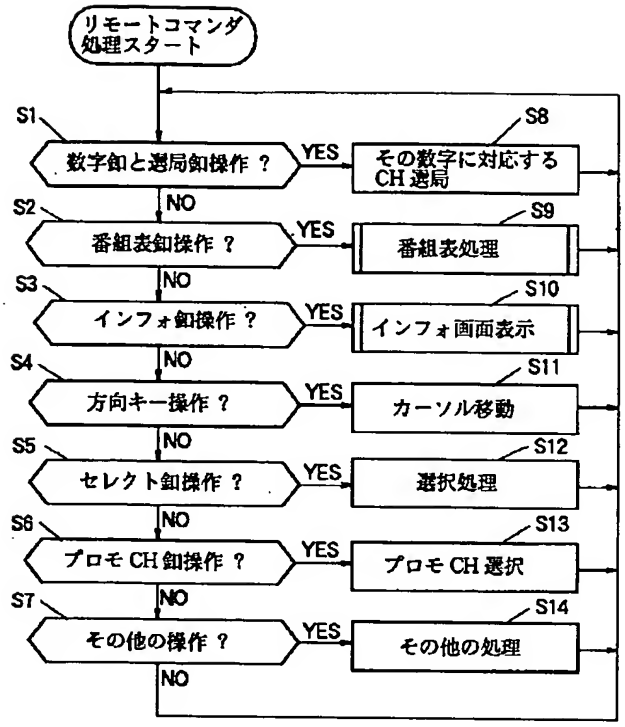


[Drawing 39]

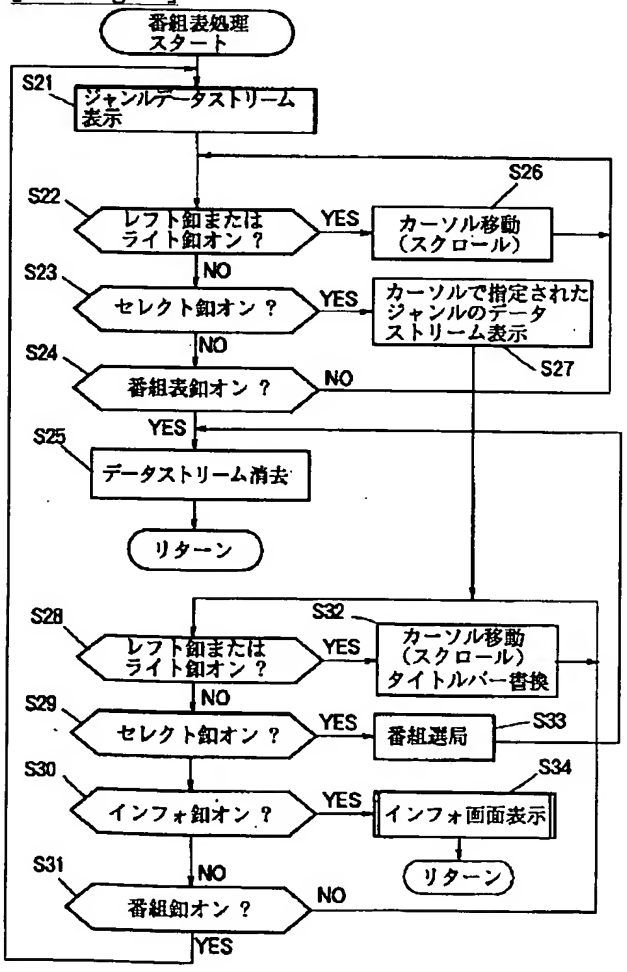
ステーションロゴの例



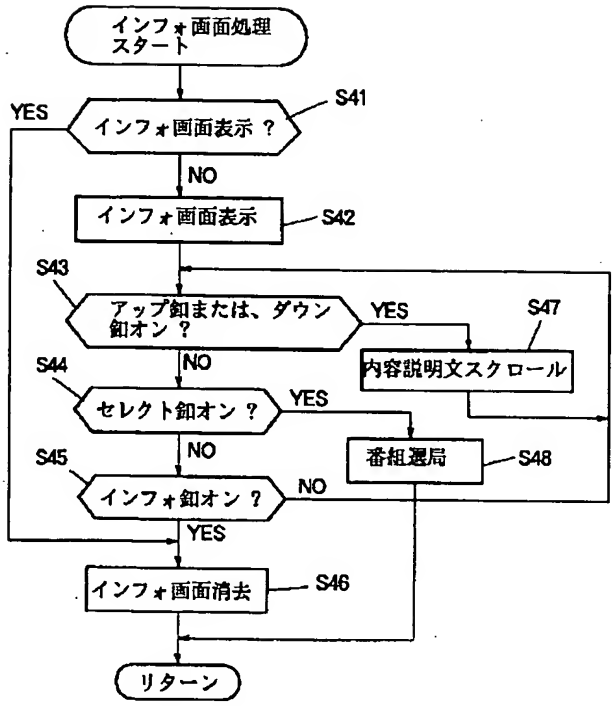
[Drawing 30]



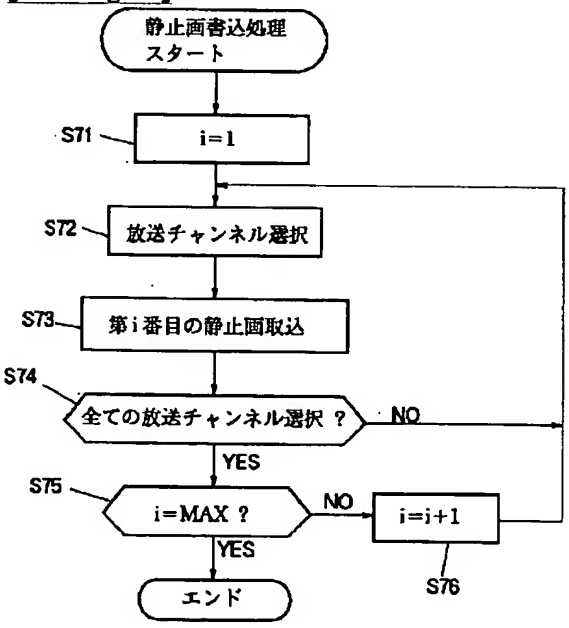
[Drawing 31]



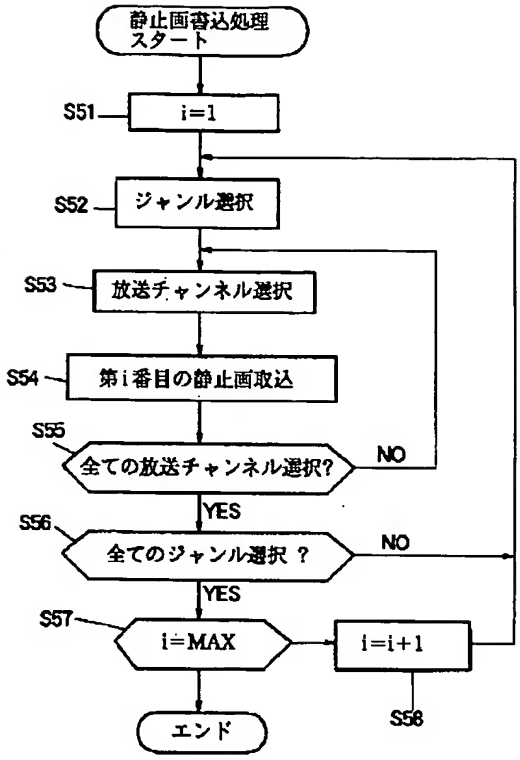
[Drawing 35]



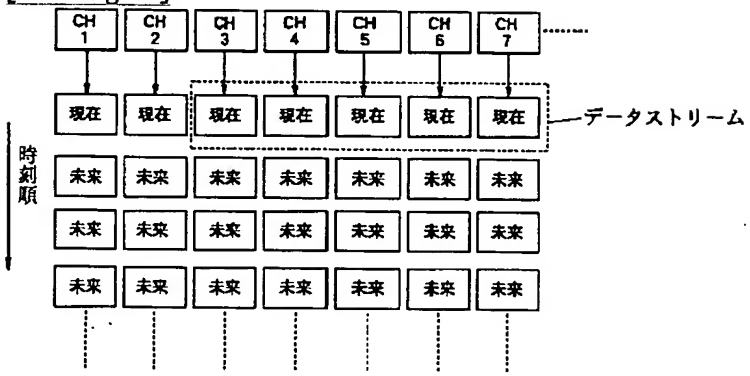
[Drawing 40]



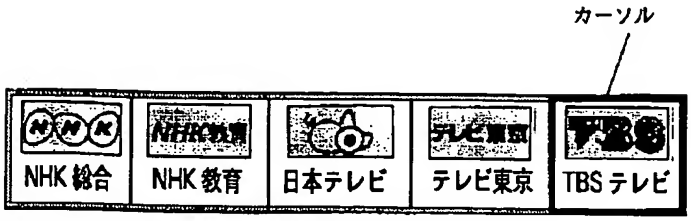
[Drawing 36]



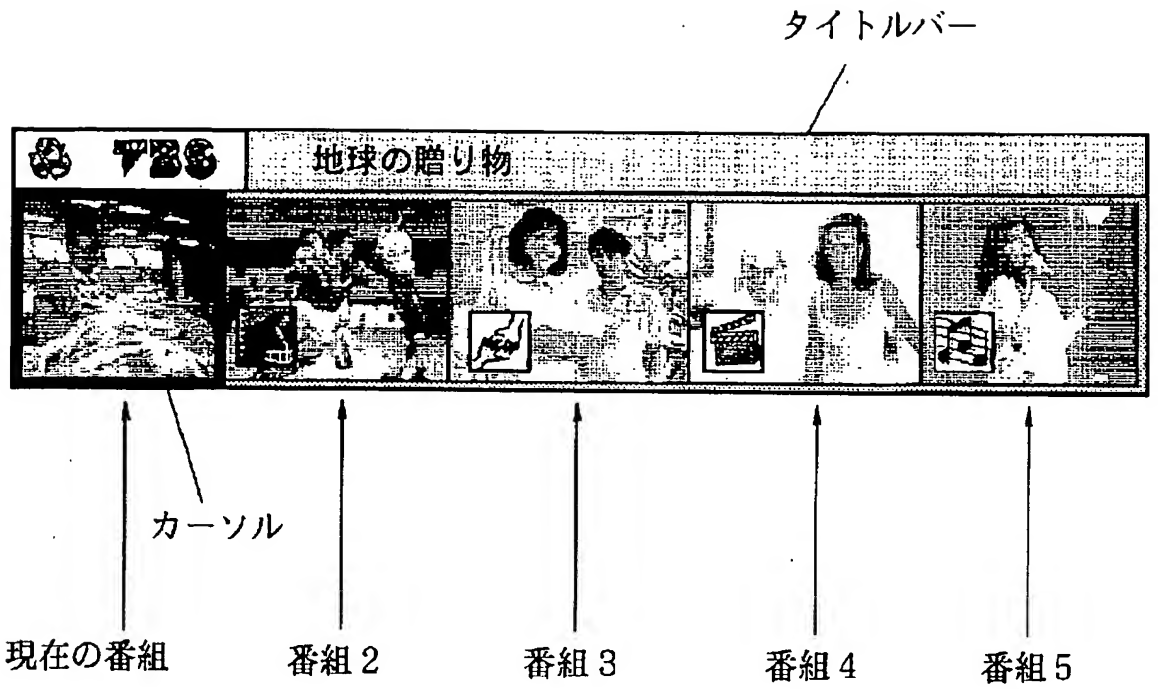
[Drawing 41]



[Drawing 42]



[Drawing 43]



[Translation done.]

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WRITTEN AMENDMENT

---------- [a procedure revision]
[Filing Date] December 8, Heisei 7
[Procedure amendment 1]
[Document to be Amended] Specification
[Item(s) to be Amended] Easy explanation of a drawing
[Method of Amendment] Modification
[Proposed Amendment]
[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the example of a configuration of the sending set adapting this invention.
[Drawing 2] It is the block diagram showing the example of a configuration of the promotion channel generation equipment 302 of drawing 1 .
[Drawing 3] It is the photograph of the halftone image displayed on the display in which the example of a display of a promotion channel is shown.
[Drawing 4] It is the photograph of the halftone image displayed on the display in which the example of a display of a data stream is shown.
[Drawing 5] It is drawing showing the configuration of a title bar.
[Drawing 6] It is the photograph of the halftone image displayed on the display in which the configuration of a program window is shown.
[Drawing 7] It is the photograph of the halftone image displayed on the display in which the example of a display of an information screen is shown.
[Drawing 8] It is the photograph of the halftone image displayed on the display in which the example of a display of a whole race card is shown.
[Drawing 9] It is the photograph of the halftone image displayed on the display in which the example of a display of a channel race card is shown.
[Drawing 10] It is the photograph of the halftone image displayed on the display in which the example of a display of program detail explanation (the contents of a program) is shown.
[Drawing 11] It is drawing explaining the range of a race card and the contents of a program.
[Drawing 12] It is drawing explaining transmission of the EPG information in a transponder.
[Drawing 13] It is drawing explaining EGP data.
[Drawing 14] It is drawing explaining the configuration of SDT.
[Drawing 15] It is drawing explaining the configuration of EIT.
[Drawing 16] It is drawing showing a format of a still picture.
[Drawing 17] It is drawing explaining the configuration of TDT.
[Drawing 18] It is drawing explaining the configuration of PAT.
[Drawing 19] It is drawing explaining the configuration of PMT.
[Drawing 20] It is the perspective view showing the example of AV structure of a system adapting this invention.
[Drawing 21] It is the block diagram showing the electrical installation condition of AV system of drawing 20 .
[Drawing 22] It is the front view showing the example of a configuration of the transverse plane of IRD2 of drawing 20 .
[Drawing 23] It is the block diagram showing the example of a configuration inside [of drawing 20] IRD2.
[Drawing 24] It is the top view showing the example of a configuration of the top face of the remote commander 5 of drawing 20 .
[Drawing 25] It is drawing showing other array conditions of the button switch of a remote commander 5.
[Drawing 26] It is the block diagram showing the example of a configuration inside the remote commander 5 of drawing 24 .
[Drawing 27] It is drawing explaining the outline of the processing in the encoder of a transmitting side, and processing of IRD2 which receives the output.
[Drawing 28] It is drawing explaining the EPG data memorized by EPG area 35A of drawing 23 .
[Drawing 29] It is the block diagram showing other examples of a configuration of IRD2.
[Drawing 30] It is the flow chart which shows the example of processing of a remote commander.
[Drawing 31] It is the flow chart which shows the detail of the race card processing in step S9 of drawing 30 .
[Drawing 32] It is drawing showing the example of a display of step S21 of drawing 31 .

[Drawing 33] It is the photograph of the halftone image displayed on the display in which the example of a display of step S27 of drawing 31 is shown.
[Drawing 34] It is drawing explaining a switch of the display corresponding to processing of drawing 31 .
[Drawing 35] It is the flow chart which shows the detail of the information screen-display processing in step S10 of drawing 30 , and step S34 of drawing 31 .
[Drawing 36] It is a flow chart explaining still picture write-in processing.
[Drawing 37] It is drawing showing the result of processing of drawing 36 .
[Drawing 38] It is drawing showing the example of a genre icon.
[Drawing 39] It is drawing showing the example of a station LOGO.
[Drawing 40] It is the flow chart which shows other examples of processing which write in a still picture.
[Drawing 41] It is drawing showing the result of write-in processing of drawing 40 .
[Drawing 42] It is drawing showing other examples of a display in step S21 of drawing 31 .
[Drawing 43] It is the photograph of the halftone image displayed on the display in which other examples of a display in step S27 of drawing 31 are shown.
[Description of Notations]
1 AV System
2 IRD
3 Parabolic Antenna
4 Monitoring Device
5 Remote Commander
21 Tuner
23 Error Correction Circuit
24 Demultiplexer
25 MPEG Video Decoder
25a DRAM
26 MPEG Audio Decoder
26a DRAM
29 CPU
35 Data Buffer Memory
35A EPG area
36 SRAM
37 ROM
38 EEPROM
39 IR Receive Section
131 Select Button Switch
144 Race Card Button Switch
145 Information Button Switch

[Translation done.]

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